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THE

VETERINARY BULLETIN

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DISEASES CAUSED BY BACTERIA AND FUNGI

I. & II. ROGERS, D. E. & MELLY, M. A. (1957). **Studies on bacteriemia. II. Further observations on the granulocytopenia induced by the intravenous injection of staphylococci. III. The blood stream clearance of *Escherichia coli* in rabbits.**—*J. exp. Med.* **105,** 99-112 & 113-124. [Authors' summaries modified.] **1951**

I. Intravenous injection of staphylococci produced a marked, transient granulocytopenia in rabbits. Leucopenia was rapidly followed by return of polymorphonuclear leucocytes to the peripheral blood, and normal circulating granulocyte levels were re-established within 20 to 40 min.

Differential arterio-venous leucocyte studies showed that polymorphonuclear leucocytes were trapped within the pulmonary vascular bed and, less constantly, in the splanchnic viscera during the initial 10 to 20 min. after the inj. of staphylococci. Granulocytes were subsequently found in larger numbers in blood leaving the lungs and splanchnic tissues, suggesting that entrapped polymorphonuclear leucocytes rapidly re-entered the blood stream. This sequence of changes in circulating granulocytes was not significantly altered by splenectomy or the administration of cortisone.

It has previously been shown that virtually all staphylococci in the blood stream are found within circulating polymorphonuclear leucocytes 10 to 40 min. after the inj. of culture. It is during this period that granulocytes return to the blood stream in large numbers. These observations suggest that staphylococci are phagocytosed by polymorphonuclear leucocytes temporarily sequestered in the lungs and splanchnic viscera. It appears probable that some sequestered granulocytes containing living staphylococci subsequently return to the circulation. Such intra-leucocytic staphylococci are believed to play a role in the maintenance of bacteraemia.

II. Large numbers of *E. coli* were rapidly removed from the blood stream of rabbits at rates which initially paralleled the removal of similar numbers of staphylococci. Splanchnic tissues removed about two-thirds of the circulating bacilli in transit through the liver and spleen. In contrast to the findings with staphylococci, splanchnic trapping of *E. coli* continued unchanged for 3 to 5 hours unless the splanchnic tissues were clearly re-seeding the blood stream. *E. coli* continued to disappear for 60 to 90 min. Some of the differences in the initial clearance of these two microorganisms appeared to relate to differences in host leucocyte-bacterium relationships. Studies *in vitro* indicated that *E. coli* were rapidly killed after ingestion by rabbit polymorphonuclear leucocytes. The injection of *E. coli* was followed by a prolonged granulocytopenia with evidence of sequestration of granulocytes within the pulmonary vascular bed. It appears probable that *E. coli* ingested by sequestered leucocytes are destroyed within the cell, and that leucocytes containing living *E. coli* do not re-enter the circulation. An increasing *E. coli* bacteraemia occurred rapidly after the initial clearance period, indicating that many sequestered bacilli remained viable. The bacterial or host cell mechanisms which allow this secondary resurgence of bacterial populations are being studied.

MANTEN, A. (1956). **The action of antibiotic combinations on pathogenic staphylococci *in vitro*.**—*Antibiot. & Chemother.* **6,** 480-486. [Spanish summary: p. 527.] **1952**

Antagonism and synergism between combinations of drugs used for the treatment of staphylococcal infections were investigated *in vitro* using a modification of Lederberg's replica technique. The antibacterial effects of penicillin and streptomycin appeared to be mainly bactericidal, whereas chloramphenicol, tetracycline and erythromycin were more markedly bacteriostatic. Combinations of streptomycin with penicillin, chloramphenicol, tetracycline or erythro-

mycin were usually synergic whereas penicillin with chloramphenicol, tetracycline or erythromycin was usually antagonistic. In general no interaction was noted between mixtures of chloramphenicol and tetracycline, chloramphenicol and erythromycin or tetracycline and erythromycin. Strains of staphylococci, resistant to penicillin, appeared *in vitro* to be susceptible to combinations of the other antibiotics. In the author's experience (in the Netherlands) 30% of hospital strains of staphylococci isolated in 1955 were resistant to both penicillin and streptomycin and about 15% were resistant to these antibiotics plus the tetracyclines. It is suggested that combined antibiotic therapy has an important function in reducing the risk of further developing resistance.—S. Brian Kendall.

Smith, H. Williams (1957). **The multiplication of *Staphylococcus aureus* in cow's milk.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **16,** 39-52. [Author's summary slightly modified.] **1953**

The results of studying the effect of temperature on the multiplication of *Staph. aureus* in the milk of a cow whose udder was latently infected with this organism, and in specimens of naturally infected herd milk indicated two reasons for the low incidence of staphylococcal food poisoning originating from raw milk. These were the comparatively low temperatures at which milk is normally kept and the frequent presence in it of bacteria other than *Staph. aureus*. Much lower plate counts of the organism were obtained from incubated specimens of sterile raw milk to which cultures of *Staph. aureus* were added than from the corresponding specimens of heated milk (5 min. at 100°C.). The presence of a heat-labile clumping factor in raw milk was mainly responsible for this. Its effects could be overcome by violent agitation of the diluting fluid when the counts were being made. Continuous agitation of the milk during incubation was without effect.

Dodd, F. H., Oliver, J. & Neave, F. K. (1957). **The effect of design of teat-cup liners on mastitis incidence.**—*J. Dairy Res.* **24,** 20-26. [Authors' summary modified.] **1954**

The authors studied the effect on udder health and milk yield when half-udders of cows were milked with either a moulded or an extruded teat-cup liner. There was a higher incidence of mastitis in quarters that were milked with moulded than with extruded liners, but the incidence of new infection was similar. The types of liners used had no measurable effect on erosion of the teat orifice or leucocyte content of the milk, nor was the decline in milk yield with advance in lactation significantly different for the 2 groups.

Hemsley, L. A. (1956). **Antibiotic sensitivity tests and mastitis.**—*Vet. Rec.* **68,** 1022-1023. **1955**

The sensitivity to penicillin, streptomycin, oxytetracycline and chloramphenicol of the organisms isolated from 12 of 27 cases of bovine mastitis seen in general practice is reported. Penicillin resistance was shown by 2 of 4 organisms isolated from quarters previously treated with penicillin. The coliform organisms isolated were sensitive to both oxytetracycline and chloramphenicol. In one case, an infection in one quarter possibly due to *Streptococcus uberis* was resistant to all antibiotics but cleared immediately with intramammary injection of sulphathiazole.—A. Ackroyd.

I. Olsen, S. J. (1956). Fortsatte undersøgelser over infektioner med gruppe L-streptokokker hos kvaeg. **[Infections with Group L streptococci in dairy cattle.]**—*Nord. VetMed.* **8,** 777-794. [In Danish. English and German summaries. Abst. from English summary.] **1956**

II. Olsen, S. J. (1957). Infektioner med gruppe L-streptokokker hos svin. Foreløbig meddelelse. **[Infections with group L streptococci in pigs.]**—*Ibid.* **9,** 49-54. [In Danish. English and German summaries. English summary modified.] **1957**

I. During 10 years' routine examination of milk from 11 herds, Group L streptococci were isolated from the milk of 175 cows. The same organisms were also isolated from cowmen and pigs on the same farms. Infection of the udder was seldom accompanied by acute purulent mastitis; often there was no change in the milk.

II. In connexion with a number of outbreaks of Group L-streptococcal mastitis in cattle 1,035 cultures were made from material from various species of animals including man in an attempt to trace the sources of infection, Group L-streptococci being isolated from man and pigs only. In man bacteria were recovered from the skin and pharynx, in pigs from the skin and pharynx, but particularly from the mucous membrane of the vagina. 26·9% of all cultures from the vagina yielded Group L-streptococci. The organism was isolated from apparently healthy pigs as well as from animals showing pathological changes. Streptococci have also been demonstrated in cases of sepsis. The mode by which infection with these strepto-

cocci may be transmitted from pigs to cattle on a farm and from one herd of pigs to another is discussed.

YAMAGUCHI, M., KAWANISHI, Y., NEMOTO, H. & AZUMA, R. (1954). **Causative factors of so-called no visible lesion reactor.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 11-12. [In English.] **1958**

As a result of experiments it is concluded that in TB. reactors without visible lesions the invading organism (whether of bovine or human type) undergoes morphological changes. The part played by the modified organism in allergic reaction remains difficult to explain.—T.E.G.R.

SEELEMANN, M., BUSCHKIEL, H. & RACKOW, H. -G. (1957). Chemoprophylaktische Versuche bei Rindertuberkulose. I. Expositionsversuche im Institutsstall. **[Chemoprophylactic experiments in bovine tuberculosis. I.]** —*Zbl. VetMed.* **4,** 80-93. [English, French and Spanish summaries. English summary modified.] **1959**

In experiments in which calves received regular prophylactic doses of "Ferroteben", (iron complex of *o*-oxybenzol-*iso*nicotinic acid hydrazide) tuberculous infection did not occur, in spite of exposure to animals with open TB. and feeding with infected material. An effective prophylactic dose was 10 mg./kg. body wt. It is possible that even smaller daily doses would be as effective. The tuberculin test remained negative throughout a period of several months cohabitation with cattle with open TB. and feeding milk containing tubercle bacilli. Control calves regularly developed TB.

SHER, B. C., CZAJA, Z. G., TAKIMURA, Y. & POPPER, H. (1957). **The course of experimental tuberculosis inhibited by isoniazid.**—*Amer. Rev. Tuberc.* **75,** 295-302. [French and Spanish summaries. Authors' summary modified.] **1960**

G. pigs infected with an effective dose of tubercle bacilli and treated for 2 months with isoniazid failed to show morphological evidence of TB. for about 8 months. After this period, the majority died with evidence of TB., although it was histologically less severe in degree than in the infected controls. This indicates that during the preceding months an arrested TB. existed. G. pigs in the arrested stage of TB. had a partial resistance to re-infection, since they survived much longer than animals given a primary infection at the same age. The average survival time of the treated re-infected animals was slightly shorter than that of the treated ones that were not re-infected.

DE FREITAS, D. C. & NETO, L. Z. (1955). Resultados preliminares de investigações sôbre a ocorrência de *M. tuberculosis* resistentes à estreptomicina e hidrazida em amostras isoladas de animais. **[Resistance to streptomycin and isoniazid in tubercle bacilli of animal origin.]**—*Rev. Fac. Med. vet., S. Paulo* **5,** 347-352. [English summary.] **1961**

There was no resistance to either streptomycin or isoniazid among 27 strains isolated from cattle which had not been previously treated with either of the substances. Of 11 strains isolated from untreated dogs one was resistant to 50 μg. streptomycin and another was resistant to 500 μg. streptomycin and 100 μg. isoniazid, the remaining 9 being sensitive to both. It is considered possible that the resistant strains were of human origin and had acquired resistance before the dogs were infected.

—T.E.G.R.

NEMOTO, H. & KAWANISHI, Y. (1954). **Studies on media for the isolation of bovine type tubercle bacilli. Effect of tween 80 (a polyoxyalkylene derivative of sorbitan monooleate) added to the usual egg media.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 13-14. [In English.] **1962**

Better and more rapid growth was obtained on egg medium containing 1% Tween 80 than on ordinary agar or egg media. The colonies were round, moist, opaque and had a smooth surface.—T.E.G.R.

I. FOX, W., WIENER, A., MITCHISON, D. A., SELKON, J. B. & SUTHERLAND, I. (1957). **The prevalence of drug-resistant tubercle bacilli in untreated patients with pulmonary tuberculosis: A national survey, 1955-56.** —*Tubercle, Lond.* **38,** 71-84. **1963**

II. MITCHISON, D. A. & SELKON, J. B. (1957). **Bacteriological aspects of a survey of the incidence of drug-resistant tubercle bacilli among untreated patients.**—*Ibid.* 85-98. **1964**

I. Out of 974 cultures obtained, 50 (5·1%) were resistant to one or more of 3 anti-TB. drugs. 44 of the resistant strains were *M. tuberculosis* and the remainder were atypical mycobacteria. Of the 44 strains 22 were resistant to streptomycin, 21 to *p*-aminosalicylic acid, and 7 to isoniazid. Five strains were resistant to more than one drug.

II. An account of the bacteriological technique employed in the national survey. Three bovine strains resistant to *p*-aminosalicylic acid were isolated.—R.M.

LOVELL, R. (1956). **Studies on *Corynebacterium renale*. V. Some observations on a chemical extract.** — *J. comp. Path.* **66**, 332-337. [Author's conclusions modified.] **1965**

The preparation and properties of a chemical extract of *C. renale* are described. It appears to be mainly carbohydrate in nature, consisting of ribose, arabinose, mannose and galactose. It forms a precipitate with immune serum and may be absorbed on to sheep r.b.c. The sensitized cells are agglutinated by immune sera and may be used for the demonstration of *C. renale* antibodies in normal sera. I/v inoculation of the extract into mice causes a disturbance of the circulation in the kidneys which become pale and bloodless, while the blood flow in the spleen and liver is unimpaired. L. discussed the pathogenic and serological significance of this extract.

PINI, A. (1957). Isolamento del *Malleomyces mallei* da materiale inquinato su due terreni solidi colorati. [**Isolation of *Pfeifferella mallei* on malachite green-fuchsin agar and on thionin agar.**] — *Vet. ital.* **8**, 103-107. [English, French and German summaries.] **1966**

In a malachite green-fuchsin medium colonies of *Pf. mallei* grow in 24 hours and have a characteristic blue colour surrounded by a violet-red colour. Streptococci and staphylococci grow with difficulty and the colonies are dark-red surrounded by a zone of light red. *E. coli* colonies are violet-grey surrounded by a violet zone. *Pseudomonas pyocyanea* grows in reddish colonies which change to yellow after 36 hours. On thionin agar, which is violet in colour, the colonies are greyish white surrounded by bluish zones. Colonies of other organisms are not surrounded by a zone of discoloration. Thionin may be replaced by parafuchsin, in which case the *Pf. mallei* colonies are surrounded by a zone of discoloration while the rest of the medium is red. These media were satisfactorily used for the isolation of *Pf. mallei*.—T.E.G.R.

NEMOTO, H., YAMAGUCHI, M., AZUMA, R. & KAWANISHI, Y. (1954). **Therapeutical study of experimental glanders with antibiotics.**— *Abstr. Proc. Suiyokai, Tokyo*, 1956. pp. 14-15. [In English.] **1967**

Pf. mallei was inhibited *in vitro* by 0·75 μg. aureomycin, 3·1 μg. terramycin, 3·1 μg dihydrostreptomycin, and 2·5 μg. chloramphenicol. *In vivo tests* were carried out on g. pigs with terramycin, aureomycin and dihydrostreptomycin. The animals in the untreated control group showed Straus' reaction and died within 15 days after inoculation. In the treated groups Straus' reaction was observed at varying periods [no mortality attributable to the organism is reported].—T.E.G.R.

INAYOSHI, D., SATO, S., HASHIMOTO, K., SAKAKI, K., OHASHI, Y. & SUGIMURA, K. (1954). **Sodium azide (NaN_3) and crystal violet medium for isolation of *Erysipelothrix rhusiopathiae*.** — *Abstr. Proc. Suiyokai, Tokyo*, 1956. pp. 1-2. [In English.] **1968**

Bacillus subtilis, Corynebacterium pyogenes, Escherichia coli, Proteus hauseri, Staphylococcus aureus, Streptococcus pyogenes, Str. viridans, Str. faecalis, Erysipelothrix (*Listeria*) *monocytogenes,* and *E. rhusiopathiae* were inoculated on "Packer's medium", consisting of 5% horse blood tryptose agar, 1:1,000 NaN_3 and 1:100,000 crystal violet. The growth of all except *Str. faecalis* and *E. coli* was inhibited. The same results were obtained when horse serum was substituted for horse blood. Tryptose broth (containing 1:2,000–1:6,000 NaN_3 and 1:200,000 crystal violet), tryptose serum agar (containing 1:2,000 NaN_3 and 1:100,000 crystal violet) and ordinary culture medium were also used. All contaminants, except *Str. faecalis,* were inhibited by the first 2 media. Isolation of *E. rhusiopathiae* was more difficult on the ordinary medium owing to the diffuse growth of *Proteus.* It is concluded that the Packer medium may be of value for the isolation of *E. rhusiopathiae* although it does not completely inhibit *Str. faecalis*.—T.E.G.R.

GERMAN, L. S. (1955). [**The opsono-phagocytic reaction in swine erysipelas.**] — *Trud. voronezh. oblast. nauchno-issled. Vet. opuit. Stants.* No. 4. pp. 39-48. [In Russian.] **1969**

G. studied the opsono-phagocytic reaction of blood from pigs before and at intervals after inoculation of living attenuated swine erysipelas vaccine [see also *V.B.* **27, 1658-1660**]. They were given two inoculations, 14 days apart. Phagocytic activity in vaccinated pigs was on the average 6 times (in some pigs 12–15 times) greater shortly after the second inoculation than in non-vaccinated pigs. A sharp fall occurred within 3 months in pigs inoculated at 2½ months of age, but not in those inoculated at 5 or 6 months. The fall in activity was not so great if the young pigs were re-vaccinated after 2 months. It was concluded that the reaction was a valuable means of assessing post-vaccinal immunity in swine erysipelas.—R.M.

JACOTOT, H., VALLÉE, A. & VIRAT, B. (1956). Une épizootie de listerellose dans un élevage

de chinchillas. **[Outbreak of listeria infection on a chinchilla farm.]**—*Bull. Acad. vét. Fr.* **29,** 427-430. **1970**

In an outbreak of *Erysipelothrix* (*Listeria*) *monocytogenes* infection on a chinchilla farm, about 50 of the 80 animals died. The agent belonged to serotype 1. The disease could have been introduced by vermin, or by chinchillas purchased 3 weeks previously, which had been imported from the U.S.A.—M.G.G.

COLLET, P., GENET, RENAULT, L. & VALENTIN, F. (1955). Pseudo-tuberculose hépatique à bacille de Malassez et Vignal chez le chien. **[*Pasteurella pseudotuberculosis* infection in a dog.]**—*Bull. Soc. Sci. vét. Lyon* **57,** 307-312. **1971**

Fatal, chronic *Past. pseudotuberculosis* infection in a dog was described. After the appearance of gastro-enteritis which seemed to be cured by antibiotics, a progressive anaemia developed, terminating in death. The animal showed pain on pressure over the hypochondrium and extreme sensitivity to pressure on the terminal dorsal vertebrae. P.M. examination revealed numerous nodular lesions, with a tendency to necrosis, in the liver and mesenteric lymph nodes. *Past. pseudotuberculosis* was recovered from the lesions. The infection was possibly connected with the ingestion of part of the carcass of a wild rabbit.—M.G.G.

MORRISON, R. B., EL BAGOURY, S. & FLETCHER, S. (1956). **Effect of chloramphenicol in maintaining the viability of *Escherichia coli*.**—*Nature, Lond.* **178,** 1467. **1972**

The viable count of a control suspension of *E. coli* stored at 5°C. fell to about half its original value by the end of 3 weeks, whereas in the presence of 10 or 100 μg./ml. of chloramphenicol it remained unchanged. When similar suspensions were stored at 22°C. the effect was even more marked. Whether death of the bacteria is encouraged or prevented probably depends on a number of factors such as species of bacterium, temperature, concentration of chloramphenicol and numbers of bacteria.
—E.V.L.

WHEELER, G. P., SCHABEL, F. M., JR. & SKIPPER, H. E. (1956). **Potentiated inhibition of *Escherichia coli* by certain combinations of agents.**—*Proc. Soc. exp. Biol., N.Y.* **92,** 396-399. **1973**

The inhibition of growth of *E. coli* in a simple chemically defined glucose–salts medium was used as an index of possible activity against neoplasms. A number of potentiating mixtures was tested, of which pyrimethamine ("Daraprim") with canavanine sulphate and 3-(1, 2, 4-triazolyl) alanine with canavanine sulphate were probably the most active. Although some combinations showing high efficacy against *E. coli* were found on test to be ineffective against neoplasms, it is nevertheless considered that the method has value for the preliminary screening of drugs.—S. BRIAN KENDALL.

SAKAZAKI, R. & MURASE, N. (1954). **Serological studies on *Salmonella abortus equi*. II. Flagellar antigen.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 7-8. [In English.] **1974**

All cultures studied had the same antigenic structure and it is considered that any strain, unless it contains R antigen, may be used for serological tests. Standardization of the suspension is necessary for uniform agglutination. Infected serum usually has a lower H and a higher O agglutinin titre than normal serum and the relative tests have to be carried out separately. O agglutination is inhibited by flagella.
—T.E.G.R.

AOKI, S., KUME, T. & EBI, Y. (1954). **On the practical value of precipitin reaction in the diagnosis of *S. abortus equi*.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 8-9. [In English.] **1975**

It is considered that the precipitin test is of diagnostic value when positive reactions are obtained. Infection cannot be ruled out on the strength of negative reactions.—T.E.G.R.

AOKI, S. (1954). **Isolation of *S. abortus equi* from wild mouse (*Mus molossinus molossinus*) in the endemic area of *S. abortus equi*.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 9-10. [In English.] **1976**

The organism was frequently isolated from various organs of wild mice which, being highly susceptible to it, play an important part in its transmission.—T.E.G.R.

STEWART, T. (1957). **A note on the incidence of salmonella infection in healthy cattle.**—*Vet. Rec.* **69,** 94-95. **1977**

From faeces, bile and mesenteric lymph node samples from 924 healthy cattle slaughtered at the Dalkeith abattoir (Scotland) which receives animals from an area where a widespread milk-borne outbreak of food poisoning due to *Salmonella typhi-murium* had occurred and 50% of the cattle were of Irish origin, only one salmonella organism was isolated. This was identified as *S. typhi-murium*.—A. ACKROYD.

NILSSON, T. (1955). Undersökning över förekomsten av salmonella hos hund. **[Inci-**

dence of salmonella in dogs.]—*Nord. hyg. Tidskr.* **36,** 233-240. [In Swedish. Abst. from English summary.] **1978**

N. examined P.M. 215 dogs. The spleen, gall bladder, intestine and mesenteric lymph nodes of 158 were examined bacteriologically. From the remainder only the faeces were examined. Four cases of *S. typhi-murium* infection and 3 of *S. cholerae-suis* infection were encountered: there was enteritis in 4 of these 7 cases, and in 2 dogs the disease was associated with human infection. A dog experimentally infected with *S. typhi-murium* recovered from the initial illness and excreted the bacteria in the faeces for at least 6 weeks.—R.M.

NASSAL, J. (1957). Bekämpfung der Pullorum-Infektion im Rahmen des Geflügel-Gesundheitsdienstes in Südbaden von 1949 bis 1955. **[Control of *S. pullorum* infection in South Baden during 1949-55.]** — *Berl. Münch. tierärztl. Wschr.* **70,** 24-28. [English summary.] **1979**

From 1949 to 1955, 137,989 fowls were tested for *S. pullorum* infection by the fresh blood rapid agglutination test; 12,287 birds gave positive reactions and were slaughtered. By 1955, the 1949 incidence of infection of 19·5% had fallen to 1·4%.—M.G.G.

WATANABE, S. & NAGAI, T. (1954). **Studies on salmonellosis in fowl. IV. Resistance to *S. pullorum* of egg yolk and chick embryo from the reactor of pullorum disease.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. p. 5. [In English.] **1980**

It is stated that: Salmonella infection can occur through the egg shell; *S. pullorum* and its antibodies are transmissible from hen to egg; and the antibody in the egg inhibits the growth of *S. pullorum* until the latter part of incubation. —T.E.G.R.

RAO, S. B. V. (1956). **Isolation of *Salmonella-litchfield* from an outbreak in chicks in the Indian Union.**—*Indian J. vet. Sci.* **26,** 131-134. [Author's summary slightly modified.] **1981**

A salmonella organism isolated from baby chicks, and which caused a mortality of 50% in a poultry farm in India, was identified as *S. litchfield* (antigenic formula 6,8;*l,v*-1,2). Experimentally, the organism was pathogenic for young chicks, while adults became carriers. Sulphamethazine in the drinking water controlled the disease effectively.

GORDON, R. F. & TUCKER, J. F. (1957). **The isolation of *Salmonella infantis* from a turkey poult.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **16,** 71-72. [Authors' summary modified.] **1982**

Salm. infantis was cultured from the liver and intestines of a turkey poult (one of 70 that had died out of 180 hatched). This appears to be the first report of the isolation of this organism from the turkey.

WRIGHT, G. W. & FRANK, J. F. (1956). **Penetration of eggs by *Salmonella typhi-murium*.** —*Canad. J. comp. Med.* **20,** 453-457. [French summary.] **1983**

Eggs of high specific gravity (1·090 or higher) and low sp. gr. (1·070 or lower) were tested for shell penetration with *S. typhi-murium*. The proportion of eggs penetrated was slightly higher in the low sp. gr. group; it was confirmed that a direct relationship existed between shell thickness and sp. gr. Bacterial penetration did not appear to be influenced by chilling immediately after dipping in the culture. —R. V. L. WALKER.

SAKAZAKI, R., NAMIOKA, S. & WATANABE, S. (1954). **A method for the detection of *Salmonella*.** — *Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 6-7. [In English.] **1984**

Yeast extract broth and modified MacConkey agar were used instead of Kauffmann's enrichment broth and SS agar plate. This method is considered more suitable for the isolation of *Salmonella* from blood and internal organs but not from faeces.—T.E.G.R.

SIMONELLA, P. & DE CAMILLIS, T. (1956). Identificazione delle salmonelle mediante un batteriofago. **[Identification of salmonella by means of bacteriophage.]**—*Vet. ital.* **7,** 1051-1064. [English, French and German summaries.] **1985**

Various techniques for the study of the sensitivity of *Salmonella* to "O_{-1}" bacteriophage were investigated. By diluting a loopful of organisms in the bacteriophage suspension (which should contain at least 10^8 bacteriophage particles) and sowing a drop of this mixture on a solid culture-medium it was possible to obtain lysis with all of 37 strains tested. Bacteria other than *Salmonella* were not sensitive to the bacteriophage. It is considered that this method may be of value in the bacteriological examination of meat.—T.E.G.R.

BUXTON, A. (1957). **Salmonellosis in animals. A review.** pp. 209. Review Series No. 5 of the Commonwealth Bureau of Animal Health. Commonwealth Agricultural Bureaux, Farnham Royal, Bucks., England. 25s. **1986**

A comprehensive review of the salmonella infections of domestic animals and poultry, fur-bearing animals, rodents, reptiles, insects and ticks.

The main chapters cover: General characters of the organisms; classification; distribution of species in animals; symptoms and lesions; epidemiology; immunology; chemotherapy and disinfection; and public health aspects.

Numerous tables are included, the more extensive of which deal with the antigenic structure of serotypes; the host species of serotypes; and the fermentation reactions.

Veterinarians, whether engaged in research, teaching or practice, and medical workers in the field of public health will find it an invaluable reference book. There are over 1,750 references.

I. & II. Bürki, F. & Mosimann, W. (1956). Diagnose der Rinderbrucellose durch einen Kutantest mit einem nicht-agglutinogenen Allergen aus Brucella abortus. II. Mitteilung. Desensibilierungsversuche und Eruierung aktiver Brucellosen beim Kaninchen und beim Rind. III. Mitteilung. Kutantest und Praecipitation an Kaninchen nach Vorbehandlung mit lebenden Brucellen, mit toten Brucellen bzw. mit Allergen. **[Diagnosis of bovine brucellosis by a skin test using non-agglutinogenic allergens from *Br. abortus*. II. & III.]**—*Int. Arch. Allergy, N.Y.* **8,** 193-207 & 265-272. [In German. English summaries slightly modified. For Part I see *V.B.* **27,** 1012.] **1987**

I. In the rabbit and calf an allergen prepared by the method described by Mosimann [*V.B.* **22,** 343] demonstrated neither an agglutinin-stimulating nor a neutralizing action. Its use has therefore no disturbing influence on the agglutination test. The antibody with which allergen reacts has no relationship to the agglutinins. The reaction may be demonstrated *in vivo* (i/d test) or *in vitro* (precipitation). Both types of test were positive in rabbits and calves when active brucellosis was present. The desensitizing action of the allergen was slight at the dosages used by the authors.

II. The authors confirmed that massive infection of rabbits with virulent *Br. abortus* led to the formation of antibodies detectable by i/d or precipitation tests with the allergen described. These antibodies rapidly disappeared with the cessation of active brucellosis. Repeated massive doses of killed organisms may lead to a positive i/d test and a negative precipitation test. During recovery from infection with virulent organisms, the precipitation test became negative earlier than the i/d test. Although the latter test appeared to be more sensitive, positive precipitation corresponded more closely with the active stage of infection than the i/d test.

Cameron, H. S. (1956). **The interpretation of whey titers in the diagnosis of brucellosis.**—*J. Amer. vet. med. Ass.* **129,** 581-583. **1988**

Comparison of the whey test (carried out by the plate technique using one drop of the standard ring test antigen and 0·04, 0·02, and 0·01 ml. of whey which represented whey titres 2, 3 and 4 respectively) and the blood test in 4,423 cows indicated that animals showing a whey titre 3 or 4 should be considered infected unless they have been vaccinated within 3 months or have calved within 72 hours. Whey 2 titres generally occurred in infected herds subjected to re-test and may be regarded as suspicious in the original test and positive if the titre persists. Only 23 whey 2 titres were encountered compared with 130 suspicious blood reactions and they were equally distributed between blood positive and blood negative.—A. Ackroyd.

Musiĭko, V. A. (1956). **[Significance of functional protein groups of brucella for its allergenic properties.]**—*Proc. Lenin Acad. agric. Sci.* **21,** No. 12. 36-40. [In Russian.] **1989**

M. studied "brucella hydrolysate", a preparation used for diagnostic purposes in veterinary medicine, obtained by acid hydrolysis of brucella organisms. Iodination of the brucella protein did not reduce its allergenic properties, but acetylation, de-amination and treatment with formol did. It was concluded that ON-groups, particularly amine groups, were responsible for the allergenic properties of brucella hydrolysate.—R.M.

Pomales-Lebrón, A. & Stinebring, W. R. (1957). **Intracellular multiplication of *Brucella abortus* in normal and immune mononuclear phagocytes.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 78-83. [Authors' summary modified.] **1990**

The results are given of typical experiments in host-parasite relationships at cellular level, using *Br. abortus*–mononuclear phagocyte systems. Intracellular multiplication of *Br. abortus* in normal g. pig mononuclear phagocytes was observed. In *Br. abortus* immune mononuclear phagocyte systems multiplication of the organisms was significantly restricted.

Cruickshank, J. C. (1956). **Incomplete antibodies in experimental brucella infection.**—*J. Hyg., Camb.* **54,** 562-568. [Author's summary copied *verbatim*.] **1991**

Incomplete antibodies demonstrable by the Coombs antiglobulin technique were found in almost all guinea-pigs inoculated subcutaneously with *Brucella abortus*. They were detected between the 20th and 30th day after infection and reached a peak between the 50th and 70th day, at which time their titre was 4–8 times that of the ordinary agglutinins. Paper electrophoresis of sera from infected guinea-pigs showed a great increase in λ-globulin as infection developed. Smaller increases in α_1- and β-globulin were observed.

I. Concilio, C. (1956). Notizie chimiche sul menadione e sul suo composto bisolfitico. **[The chemistry of menadione (menaphthone.)]**—*Zooprofilassi* **11**, 729-734. **1992**

II. Trivellato, E. (1956). Comportamento farmacologico del menadione bisolfito per via endovenosa. **[Menaphthone bisulphite, given intravenously, in brucellosis.]**—*Ibid.* 735-741. **1993**

III. Agrimi, P. (1956). Azione antibiotica *In vitro* del vetebang (menadione sodio bisolfito) verso alcuni agenti microbici responsabili di infezioni della sfera genitale in bovini ed ovini. **[Antibiotic action *in vitro* of menaphthone sodium bisulphite on agents of genital infections of cattle and sheep.]**—*Ibid.* 743-746. **1994**

IV. Trivellato, E. (1956). Sull'azione batteriostatica del menadione bisolfito. **[The bacteriostatic action of menaphthone.]**—*Ibid.* 749-751. **1995**

V. Fabiani, A. & Grazzini, G. (1956). L'applicazione del vetebang nella lotta contro le brucellosi degli ovini. **[Control of ovine brucellosis with "vetebang" (menaphthone).]**—*Ibid.* 753-755. **1996**

VI. del Francia, F. (1956). Profilassi della ritenzione della placenta. **[Menaphthone for prophylaxis against retention of the placenta.]**—*Ibid.* 756-757. **1997**

VII. Arce, A. A. (1956). I derivati naftochinonici nella profilassi antiabortiva del bovini. Su numerose applicazioni col "vetebang". **[Prevention of abortion in cattle with menaphthone.]**—*Ibid.* 758-759. **1998**

VIII. Giacomini, A. (1956). Ulteriori ricerche sul trattamento della brucellosi con vetebang. **[Recent research on treatment of brucellosis with menaphthone.]**—*Ibid.* 761-769. **1999**

I. The chemical and physical properties of menaphthone and of its water-soluble derivative (the bisulphite) are described.

II. It is considered that menaphthone bisulphite is active against *Brucella*. It is well tolerated, has a low toxicity, and, being water soluble, is easy to administer intravenously. It thus reaches the placenta where it exerts its anti-brucella action and prevents abortion. It is eliminated mainly by the kidneys and is not cumulative.

III. Menaphthone bisulphite, *in vitro*, had a bactericidal effect in a conc. of 10·4–20·8 μg./ml. and a bacteriostatic effect, in a conc. of 3–8 μg./ml. against *Brucella melitensis*. Three strains of *Br. abortus* were completely inhibited by 2·8 μg./ml., the 4th strain of *Br. abortus* and *Erysipelothrix* (*Listeria*) *monocytogenes* were inhibited by 20·8 μg./ml. and bacteriostatic effect was obtained with 4·16 μg./ml.

IV. The drug is active against brucella in a conc. of 5–20 μg./ml. Results of previous work on the subject are given in tabular form. These reveal that the drug exerts the same action on brucella as chloramphenicol but is less active against *Vibrio fetus* and inactive against *Salmonella abortus-ovis*. The drug is also active against a number of fungi.

V. Good results are claimed for the medicament in the treatment of brucellosis in sheep.

VI. It is claimed that the medicament administered i/v or i/m about the 7th month of pregnancy prevents retention of the placenta in cows.

VII. Treatment was carried out at the 6–7th month of pregnancy in herds with a known history of abortion and a high percentage of positive serological reactors [the cause of abortion and the infection for which the serological tests were made are not stated—presumably *Br. abortus*]. Good results are claimed.

VIII. Treatment was applied to 1,643 pregnant cows known to be infected with brucellosis. Gestation proceeded to full term and was followed by normal parturition in 1,583 animals. These results are attributed to the drug because some of the cows, left untreated during the following pregnancy, aborted. A single dose of 800 mg. is considered to have a bacteriostatic rather than a bactericidal effect since positive reactions were obtained wtih the sera of treated cows.—T.E.G.R.

Joubert, L. & Grebot, D. (1957). Le danger pour l'homme du lait de vache brucellique. Dépistage—prophylaxie—législation. **[The danger for man of milk from cows with brucellosis.]**—*Cah. Méd. Vét.* **26**, 1-15. **2000**

Although brucellosis in man from infected cows' milk is rare, the disease remains a serious danger to human health. A scheme for tracing infected dairy cows is outlined. First, churn milk would be submitted to the ring test. If this is positive, the individual cows of a herd would be

examined both by the ring test and the slow agglutination test. A titre of 1:320 in the blood serum would be considered positive, regardless of the result of the ring test. If the ring test is strongly positive for a particular animal, then a doubtful agglutination reaction (1:80–1:160) would be taken as corroborating the diagnosis.
—M.G.G.

LAWY, H. (1956). **The incidence in human sera of agglutinins for** *Brucella abortus*, **1948-1953.** — *Mon. Bull. Minist. Hlth Lab. Serv.* **15,** 247-251. **2001**

During the period 1948-50, 1·05% of 6,168 human sera submitted for the Wassermann reaction in the Lincolnshire area of England, had agglutinins for *Br. abortus* to a titre of 1:80 or more, whereas during the period 1950-53, only 0·64% of the 2,023 sera submitted had agglutinins to this titre. Although this difference is barely statistically significant, it may represent a genuine fall in the proportion of infected persons and be associated with the increase in the proportion of heat-treated milk on sale, the decrease in the number of producer retailers of raw milk in the area, and the increase in the number of cattle of certain categories which had been actively immunized against contagious abortion during the period. For preliminary screening a modification of Huddleson's slide agglutination test was used and was considerably more sensitive than the tube test.
—A. ACKROYD.

CRUICKSHANK, J. C. (1957). **The duration of bacteraemia in relation to the virulence of** *Brucella* **strains.**—*J. Hyg., Camb.* **55,** 140-147. [Author's summary modified.] **2002**

The duration of bacteraemia in g. pigs after s/c inoculation of brucella can be used as a measure of the virulence of the strains. Strains of low virulence (*e.g. Br. abortus* Strain 19) are almost always cleared from the blood stream within a week, whereas with virulent strains bacteraemia regularly persists for 4 weeks and may last very much longer. All of 4 strains of *Br. melitensis* isolated from cow's milk in Great Britain behaved in the same way as the typical and virulent strains of *Br. abortus* and *Br. melitensis tested,* regularly producing prolonged bacteraemia. These results do not support the suggestion that the *Br. melitensis* strains isolated in Britain are of low virulence.

RENOUX, G. (1954-55). Expériences de comparaison de quelques vaccins contre l'infection des ovins et caprins par *Brucella melitensis*. **[Comparison of some of the vaccines against** *Brucella melitensis* **infection in sheep and goats.]**—*Ann. Serv. Prod. anim., Tunis* **2,** 1-77. **2003**

Of several strains of *Br. melitensis* studied, the Mexican strain 53 H.38 proved to be the most pathogenic. Using the method described by Bonet-Maury, Jude & Servant [(1954). *Rev. Immunol.* **18,** 21-49] the $I.D._{50}$ of this strain was found to average 20,000 for the goat and 400,000 for the sheep, using in both cases animals of Swedish origin. [See also *V.B.* **26,** 44, 3113 & 3395.]—H. SCOTT MCTAGGART.

BUDDLE, M. B. (1956). **Studies on** *Brucella ovis* **(n.sp.), a cause of genital disease of sheep in New Zealand and Australia.** — *J. Hyg., Camb.* **54,** 351-364. **2004**

An organism of the genus *Brucella* has been isolated from a condition which is apparently widespread in New Zealand and Australia and which results in impaired fertility in rams, abortion in ewes and neonatal mortality in lambs. Twenty-seven strains were compared with representative strains of *Br. abortus, Br. suis* and *Br. melitensis* and appear sufficiently stable and distinguishable from them to justify their constituting a new species *Br. ovis* or a new variety, *Br. brucei* var. *ovis autralasiae.*
—H. SCOTT MCTAGGART.

PASHOV, T. V. (1956). **[Epidemiology of tularaemia in pigs and differential diagnosis of tularaemia and brucellosis.]**—*Proc. Lenin Acad. agric. Sci.* **21,** No. 12. pp. 32-35. [In Russian.] **2005**

Tularaemia occurred on 3 neighbouring pig farms in the Ukraine. The disease was latent except in piglets, in which fever (42°C.) lasted for 7–10 days and was accompanied by depression, profuse sweating, and abdominal-type respirations. P.M. the chief lesions were pleuropneumonia and abscesses of the submaxillary and parotid lymph nodes. The agglutination test for tularaemia was considered to be positive at a titre of 1:50 and doubtful at 1:25. Intradermal tests using "tularin" in 0·1–0·4 ml. doses were more reliable than the agglutination test: 98·7% of infected pigs reacted to the i/d test, but only 44·3% reacted to the agglutination test. The majority of sera from infected pigs also agglutinated brucella antigen; pigs with brucellosis only rarely aggutinated tularaemia antigen. In districts where both diseases occurred, differential diagnosis could be achieved by the method of absorption of agglutinins.—R.M.

BOULANGER, P. & SMITH, A. N. (1957). **Serological investigations of leptospirosis in Canada. III. Preliminary agglutination-lysis**

studies of cattle sera with *Leptospira pomona* and *Leptospira canicola* antigens.—*Canad. J. comp. Med.* **21,** 4-11. [French summary.] **2006**

218 out of 2,695 cattle in 68 out of 113 herds in Ontario and Quebec were reactors to *L. pomona* antigen in the serum agglutination-lysis test. Thirty-six reactors gave a titre of 1:1000 or higher indicating fairly recent infection. Tests with *L. canicola* antigen on sera found positive with the *L. pomona* antigen revealed only trace reactions suggestive of a cross-reaction. A warning is given to the clinician when interpreting the laboratory findings that the degree of serological reaction in every instance must be correlated with the clinical observations.—R. V. L. WALKER.

I. KOLOCHINE-ERBER, B., BUCK, G. & QUESNEL, J. J. (1956). La leptospirose bovine doit être suspectée à Madagascar. **[Suspected bovine leptospirosis in Madagascar.]**—*Bull. Soc. Pat. exot.* **49,** 681-686. **2007**

II. KOLOCHINE-ERBER, B. & BRYGOO, E. R. (1956). Enquête sur les leptospiroses à Madagascar. **[Investigations into leptospirosis in Madagascar.]**—*Ibid.* 686-698. **2008**

I. Of 28 serum samples of cattle examined for agglutinating antibodies 3 were positive for *L. pomona* and 3 for *L. grippo-typhosa*. One gave a doubtful reaction with *L. mitis* and another with *L. pomona*. These results are considered to point to the existence of a hitherto unsuspected leptospira infection of cattle.

II. Results of a serological survey among human and animal subjects were, on the whole, of a negative nature. It is considered, however, that although it does not play a primary part in human or veterinary pathology, leptospira infection does exist.—T.E.G.R.

MARKOV, G. P. & RUIBKINA, L. G. (1957). **[Cattle as a source of *Leptospira icterohaemorrhagiae*.]**—*J. Microbiol., Moscow* **28,** No. 3. pp. 86-89. [In Russian.] **2009**

Leptospirosis in calves on a farm in the Krasnodar region was associated with agglutination titres of 1:100,000–1:120,000 to *L. icterohaemorrhagiae* and with much lower titres to other types of leptospires. Strains isolated from the calves had the cultural characteristics of *L. icterohaemorrhagiae*.—R.M.

KREPKOGORSKAYA, T. A. & REMENTSOVA, M. M. (1957). **[Isolation of leptospires from *Dermacentor marginatus* ticks collected from cattle.]**—*J. Microbiol., Moscow* **28,** 93-94. [In Russian.] **2010**

From a suspension of *D. marginatus* collected in the Taldui-Kurgan region, *L. grippotyphosa* was isolated.—R.M.

KOTOVA, O. M. (1955). **[Treatment of carcasses of animals with leptospirosis. Survival of leptospira in meat.]**—*Trud. voronezh. oblast. nauchno-issled. Vet. opuit. Stants.* No. 4. pp. 129-132. [In Russian.] **2011**

Eleven sousliks were each infected s/c with 0·2 ml. of leptospira cultures, and were killed at intervals from 1 to 7 days after infection. Meat from carcasses was infective for sousliks up to 24 hours after death. 48 hours after death, meat stored at 6°C. infected only 30% of animals. Infected meat dried over 8 days to 75% of its original weight remained infective; after drying over 13 days to half its original weight the meat infected only 15% of animals. Infected meat was harmless after storage for 10 days at −10° or −20°C.—R.M.

HARTWIGK, H. (1957). Zur Sero-Diagnostik der Hundeleptospirose. **[Serological diagnosis of leptospirosis in dogs.]**—*Dtsch. tierärztl. Wschr.* **64,** 96-100. **2012**

A discussion of the technique of the agglutination-lysis reaction, and of the course of agglutinin titres during infection.—R.M.

FAINE, S. (1957). **Virulence in leptospira. I: Reactions of guinea-pigs to experimental infection with *Leptospira icterohaemorrhagiae*. II: The growth *in vivo* of virulent *Leptospira icterohaemorrhagiae*.**—*Brit. J. exp. Path.* **38,** 1-7 & 8-14. [Abst. from Survey of papers (p.i.).] **2013**

I. F. was unable to demonstrate antigenic difference between virulent and avirulent strains of *L. icterohaemorrhagiae* using absorbed agglutinating sera. After inoculation into g. pigs both strains were taken up by fixed tissue phagocytes, not by leucocytes, but only the virulent organisms survived and multiplied.

II. Direct counts of motile leptospira in tissue suspensions from g. pigs inoculated with virulent *L. icterohaemorrhagiae* revealed very large numbers in the blood and in the tissues, particularly the liver, at or near death. The severity of the lesions and the quantity of leptospira ultimately found were independent of the number inoculated, but the survival time was constantly related to the log. dose.

MUNOZ, J., SCHUCHARDT, L. F., VERWEY, W. F. & SCHEIDY, S. F. (1956). **The effect of trypsin activation on the antigenicity and**

combining power of *Clostridium perfringens* **Type D bacterin.**—*Proc. 59th Ann. Meet. U.S. live Stk sanit. Ass.* 1955. 62-68. **2014**

Alum stimulated antitoxin production when two injections of either toxin-toxoid or prototoxin-toxoid were given. After a single injection the response to toxin-toxoid was slightly better than that to prototoxin-toxoid, (which was inconclusive). Alum treated killed vaccines set up more reactions than untreated ones; this, however, was not considered to be of any practical importance. No antitoxin was demonstrable one week after a single injection of any of the killed vaccines. Titres reached their peak at two weeks and dropped to low levels by the 8th week. Higher titres were obtained with two injections.—T.E.G.R.

KALICH, J. (1957). Zur Pathogenese des Tetanus unter Berücksichtigung der Begleitkeime. **[Pathogenesis of tetanus, with reference to other bacteria accompanying infection with tetanus bacilli.]**—*Zbl. VetMed.* **4,** 51-70. [English, French and Spanish summaries. English summary modified.] **2015**

Tetanus can be produced experimentally (in mice) by very small numbers of pure tetanus spores, but not every such inoculation produces the disease. Mixed infection with other bacteria may have a decisive influence on the course of infection with *Cl. tetani*. The synergic effect of associated organisms on the toxicity of *Cl. tetani* depends not only on the species of bacteria but on their biological properties. Toxic coliform organisms favour infection with *Cl. tetani*, whereas non-toxic coliforms have an inhibitory effect. *Bacillus subtilis* can effectively prevent the development of tetanus. Tissue damage, even when some distance from the site of infection with *Cl. tetani*, favours the development of tetanus. The synergic or anergic phenomena in mixed infections are not affected by such tissue damage. *Cl. tetani* is demonstrable in the organs only when accompanied by other bacteria. *Cl. tetani* septicaemia depends on certain associated organisms. In such cases the incubation period is shorter and the disease runs a more violent course.

LAURENZA, A. & PIANESE, G. (1956). Effetti degli antibiotici sulla flora batterica del latte. **[The effect of antibiotics on the bacterial content of milk.]**—*G. Batt. Immun.* **49,** 297-302. [English, French and German summaries.] **2016**

Tests with milk samples to which were added either penicillin 0·001–10 U./ml. or streptomycin 0·01–5 μg./ml., or combinations of penicillin (0·1 and 1 U./ml.) and streptomycin (0·1–5 μg./ml.) showed the total bacterial content to be depressed in proportion to the dose, the combination yielding the best results. This activity persisted for 48 hours when the sample was kept in a refrigerator, but for only 24 hours at room temperature. The difference was attributed to inactivation of the antibiotics.

—G. P. MARSHALL.

CAPORALE, G. (1956). Due tipi poco noti di autolesione accidentale professionale. **[Accidental auto-inoculation with tuberculin and with brucella vaccine.]**—*Vet. ital.* **7,** 1127-1130. **2017**

Accidental auto-inoculation with tuberculin usually produces a mild local reaction which subsides after 4–5 days. General systemic disturbances, however, may sometimes ensue. Cases of this nature and also of generalized infection with *Brucella abortus* Strain 19 due to auto-inoculation in the course of vaccination are quoted from literature.—T.E.G.R.

CREITZ, J. R. (1956). **Atypical tissue forms of *Coccidioides immitis* resembling blastomyces.**—*Amer. J. clin. Path.* **26,** 1254-1260. [Interlingua summary.] **2018**

Atypical double forms of *C. immitis*, resembling parent cells with buds, were found in mounts of fresh tissue from human cases and from infected mice. It is considered that the atypical forms represent the process of budding despite the classification of *C. immitis* among the Phycomycetes.—E. G. WHITE.

I. CATELLANI, G. & IANNUCCI, M. (1956). Su una micosi dei polli determinata da un blastomicete patogeno del genere *Torulopsis*. **[Disease in fowls caused by a pathogenic fungus of the genus *Torulopsis*.]**—*Acta med. vet., Napoli* **2,** 335-350. [English, French and German summaries.] **2019**

II. CATELLANI, G. (1956). Studio istopatologico di blastomicosi del pollo. **[Histopathology of blastomycosis in chickens.]**—*Ibid.* **2,** 367-400. [English, French and German summaries.] **2020**

I. Mortality on a chicken farm was investigated. In a group of about 30 birds there were 8 deaths within 4–5 days after the onset of vague non-specific symptoms: inappetence, dulness, ruffling of the feathers, flexion of the head on the back and bluish-red coloration of the comb. Apart from degenerative changes in the myocardium and kidneys the only P.M. findings were in the liver. This organ was markedly enlarged, occupying almost the whole of the

abdominal cavity. Its surface was studded with greyish-white nodules, varying in size and shape, having a fatty consistency and clearly-defined margins. The unaffected portions were paler than normal, ochreish-yellow, and on section presented a greasy, shiny surface. Microscopic examination revealed rounded forms provided with a membrane and containing small bodies and areas of refraction. Material from the nodules was sown on ox-bile agar and on Sabouraud's medium. Subcultures were made on various solid and liquid media. The optimum temperature was 37° to 38°C. The organism grew well but more slowly at 25° to 28°C. Slightly acid media favoured growth, which was the same under aerobic as anaerobic conditions. The colonies assumed various characteristic shapes in different media. These and the histological changes in the liver are described. From its morphological, cultural and biochemical characteristics the organism was identified as a fungus of the genus *Torulopsis*. The disease was experimentally transmissible to chickens and g. pigs but not to rabbits and pigeons.

II. In six chickens the liver, spleen, kidneys, and lungs were affected. The gross lesions consisted of numerous nodules varying in size from that of a millet seed to that of a hazel nut, sometimes coalescing to form larger lesions. These nodules may, in some instances, be similar to those seen in other diseases of chickens as tuberculosis, leucosis and neoplasia. Histologically, the lesions consisted of a necrotic or caseous centre surrounded by palisade and giant cells. It is considered that infection may occur through the intestine following an imbalance of the normal intestinal microflora due to the inclusion of antibiotics in the feed.—T.E.G.R.

AARONSON, J. (1956). **The cultivation of *Candida albicans* in tissue culture.** — *Thesis, Cornell* pp. 28. **2021**

The incidence of systemic *C. albicans* infection in man and animals appears to be increasing. The author felt that further information on the effects of the organism on individual cells with and without the presence of an antibiotic that had been incriminated in clinical cases of the disease might shed some light on the pathogenesis of the infection. Trypsinized 8-day-old chick embryos were utilized as the tissue media. Using aseptic tissue culture technique, varying amounts of the organism, with and without oxytetracycline, were added to the cells. The cells were observed for any changes in the system. No visible alteration in cellular morphology was observed after initial concentrations of 100,000 *C. albicans*, or less, per tissue culture unit were added. *C. albicans*, killed by immersion in a water bath at 60°C., had no effect on the morphology of the embryonic cells. Terramycin hydrochloride in concentrations of 0·1 mg./ml. caused death of the tissue cells within 48 hours.—H. L. GILMAN.

HINTON, A., LARSH, H. W. & SILBERG, S. L. (1957). **Direct exposure of mice to soils known to contain *Histoplasma capsulatum*.**— *Proc. Soc. exp. Biol., N.Y.* **94,** 176-179. [Authors' summary modified.] **2022**

The susceptibility of white Swiss mice to infection with *H. capsulatum* by inhalation of dust aerosol was determined by direct exposure to infected soil samples. Disseminated histoplasmosis developed in most of the mice. Naturally contaminated soil samples stored for 5 or 10 months at room temp. remained highly infective. Artificially infected soil cultures were 100% infective for mice exposed for 1, 2, 4, or 7 days. These data support the hypothesis that man and animals become infected with *H. capsulatum* by the respiratory route. The safety hood and associated safety procedures prevented the infection of control mice although these were placed in close proximity to the exposed animals.

LAKTIONOV, A. M. (1957). **[Determination of the value of experimental allergens for the diagnosis of epizootic lymphangitis.]** — *Veterinariya, Moscow* **34,** No. 1. pp. 72-79. [In Russian.] **2023**

The incidence of epizootic lymphangitis in horses and mules of the Chinese army increased from 0·35% in 1953 to 1·13% in 1955. To facilitate diagnosis, L. prepared 2 allergens by different methods [details not given]. They were used in 0·3 ml. doses in i/d tests on 458 healthy and infected horses and mules. Both allergens appeared to give highly accurate results.—R.M.

GUILHON, J. & OBLIGI, S. (1956). Une nouvelle enzootie de teigne ovine. **[New outbreak of ringworm in sheep.]**—*Bull. Acad. vét. Fr.* **29,** 443-445. **2024**

Ringworm was present in about a dozen of a flock of 120 sheep which were affected with gastro-intestinal strongylosis and fascioliasis. The lesions were confined to the head and cleared up within 4–5 weeks in individual animals, but the infection persisted in the flock for some months. *Trichophyton verrucosum* var. *ochraceum* was isolated from infected wool. This is the common species causing ringworm in cattle in France, but it has not previously been found in sheep; it is the fourth species found associated with ringworm in sheep.

—E. G. WHITE.

MARPLES, M. J. (1956). **The ecology of *Microsporum canis* Bodin in New Zealand.** — *J. Hyg., Camb.* **54,** 378-387. **2025**

The clinical findings and environmental factors of *M. canis* infection in children in 138 families were described. In 42 of the families the source of infection was the family cat, in 5 the dog, and in 28 the source was probably an animal such as a stray kitten. In 19 families the source of infection was human, and probably so in a further 11. Clinical histories and laboratory findings revealed transmission of the infection among cats and dogs and from children to pets. It is considered that the cat is the major reservoir of the infection in New Zealand. Greater care by cat owners of their pets and the disposal of unwanted kittens would assist in controlling the disease.—M.G.G.

MENGES, R. W. & GEORG, L. K. (1957). **Canine ringworm caused by *Microsporum gypseum*.** —*Cornell Vet.* **47,** 90-100. [Authors' summary modified.] **2026**

In a survey for ringworm in 641 dogs, *M. canis* was isolated from 77, *M. gypseum* from 46, and *Trichophyton mentagrophytes* from 4. Most of the 46 *M. gypseum* cases were young animals; 29 were males and 17 females. Thirteen breeds of dogs were involved, 15 of the *M. gypseum* cases being Boxers. Two small *M. gypseum* outbreaks which affected 8 Beagles and 6 Fox Terriers are described. *M. gypseum* was isolated from 21 of 37 soil specimens collected from areas where the dogs were kept.

GENTLES, J. C. & O'SULLIVAN, J. G. (1957). **The isolation of ringworm fungi from unusual hosts.**—*Vet. Rec.* **69,** 132. [Authors' summary copied *verbatim*.] **2027**

Details are given of the isolation of *T. verrucosum* var. *discoides* from dogs for the first time in Britain. A single isolation of *T. mentagrophytes* from cattle is also reported.

SMITH, W. W., MENGES, R. W. & GEORG, L. K. (1957). **Ecology of ringworm fungi on commensal rats from rural premises in Southwestern Georgia.**—*Amer. J. trop. Med. Hyg.* **6,** 81-85. **2028**

The authors related the incidence of *Trichophyton mentagrophytes* and *Microsporum gypseum* on the skin of wild rats to the population density of the rats and the occurrence of fungi in soil samples.—R.M.

ROSSITER, L. W. (1956). **Experiments in the treatment of lumpy wool.**—*J. S. Afr. vet. med. Ass.* **27,** 179-182. **2029**

88 cases of lumpy wool diagnosed in a flock of 350 two-toothed Merino sheep were treated in four groups with, respectively, two dilutions of "Anabac" (a proprietary liquid dairy disinfectant containing 0·16% of quaternary ammonium compounds), 0·2% copper sulphate and a suspension of B.H.C. [No untreated control group.] A single application of 1 : 200 "Anabac" was effective when made to the lesions by hand, although severe cases may require two or more applications at 3-weekly intervals. Anabac removed the lumpiness from the wool whereas copper sulphate and B.H.C. did not, although they cured the dermatitis.

—H. SCOTT MCTAGGART.

CHUTE, H. L., O'MEARA, D. C., TRESNER, H. D. & LACOMBE, E. (1956). **The fungous flora of chickens with infections of the respiratory tract.**—*Amer. J. vet. Res.* **17,** 763-765. **2030**

Fungi were isolated from 56 of 63 birds with a clinical history of respiratory disease from 29 flocks. *Aspergillus fumigatus* was the pathogen most often encountered but was not always associated with tissue invasion. Fungi from the genera *Penicillium, Paecilomyces, Cephalosporium, Trichoderma, Scopulariopsis* and *Mucor* were also found.—E. G. WHITE.

HOLTENIUS, P. & NIELSEN, N. (1957). **On the occurrence of nitrate and nitrite reducing fungi in the rumen of sheep.**—*Nord. VetMed.* **9,** 210-213. [In English. German and Swedish summaries. English summary slightly modified.] **2031**

Fungi were isolated from the rumen liquid of 21 out of 23 sheep investigated. Most were found to belong to the Mucoraceae. Three were identified as *Absidia ramosa, Geotrichum candidum* and a strain of *Fusarium*. The fungi isolated grow as yeast-like cells when cultivated under submerged conditions.

Two of the fungi isolated, viz. *Absidia ramosa* and the *Fusarium* strain were found to be able to reduce nitrate and nitrite. They are probably of importance in the nitrate and nitrite reduction occurring within the sheep rumen.

LYNN, R. J. & MORTON, H. E. (1956). **The inhibitory action of agar on certain strains of pleuropneumonia-like organisms.** — *Appl. Microbiol.* **4,** 339-341. **2032**

Some batches of agar inhibited the growth of certain human strains of pleuropneumonia-like organisms. It was suggested that agar should be tested before being sold as suitable for the cultivation of P.P.L.O.—R.M.

Moran, A. B. & Cronin, M. T. I. (1957). **The *in vitro* sensitivity to nitrofurans of organisms isolated from the uteri of Thoroughbred mares.** — *J. comp. Path.* **67,** 106-109. [Authors' conclusions modified.] **2033**

In vitro tests of several nitrofuran compounds on bacteria and fungi isolated from the genital tract of Thoroughbred mares were described. "Furaspor" was effective against several strains of *Pseudomonas pyocyanea, Candida tropicalis,* and *C. parakrusei.* "Furoxone" and "Furadantin" exhibited good antibacterial powers against haemolytic streptococci (Lancefield's Group C).

I. Raibaud, P., Caulet, M. & Mocquot, G. (1957). Étude quantitative des lactobacilles et des coliformes dans le tube digestif du porc adulte. **[Quantitative study of lactobacilli and coliform organisms in the digestive tract of adult pigs.]**—*C. R. Acad. Sci., Paris* **244,** 683-685. **2034**

II. Raibaud, P. & Caulet, M. (1957). Les lactobacilles dominants dans le tube digestif du porc adulte. **[Dominant lactobacilli in the digestive tract of the adult pig.]**—*Ibid.* 816-818. **2035**

I. Lactobacilli were the most numerous bacteria in the digestive tract of pigs. There were always fewer coliform organisms, and their numbers fluctuated between individual pigs more than those of lactobacilli.

II. Out of 245 strains isolated from the digestive tract of pigs, 2 groups were dominant: *L. acidophilus* and *L. fermenti.*—R.M.

See also abstr. **2176** (diseases of young alpacas); **2282** (report, U.S.S.R.); **2284** (book, infectious diseases of fur-bearing animals).

DISEASES CAUSED BY PROTOZOAN PARASITES

Haiba, M. H. (1956). **Entamoeba bubalis n.sp. from the Egyptian buffalo (Bos bubalis).**—*Zbl. VetMed.* **3,** 396-401. [In English. French, German and Spanish summaries.] **2036**

H. examined faeces from 34 adult Egyptian buffaloes of various ages, from 22 of which an *Entamoeba,* tentatively named *E. bubalis,* was isolated. Young animals appeared to be free from the parasite. Details were given of morphology and developmental stages. The presence of four nuclei in some encysted forms was taken as proof that encystment may be part of the reproductive phase.—E.G.

Molinari, V. & Montezin, G. (1956). Variations de la virulence de *Trypanosoma congolense* chez la souris après action d'un froid de −180°C. **[Effect of low temperature (−180°C) on the virulence of *Trypanosoma congolense* in mice.]**—*Bull. Soc. Pat. exot.* **49,** 651-654. **2037**

The organism was fully virulent for mice after storage at −180°C. for 3 hours. *T. cruzi,* on the other hand, lost its motility and virulence after 5 min.—T.E.G.R.

Amrein, Y. U. (1957). **Evidence against sexuality in *Trypanosoma gambiense.***—*J. Prot.* **4,** 67-68. [Author's summary modified.] **2038**

Genetic cross transfer of laboratory-induced drug resistance from a tryparsamide-resistant strain to a suramin-resistant strain and *vice versa* was tested in cultures of *T. gambiense.* The results obtained from a variety of different concentrations of the two drugs did not give any indication of sexuality in these flagellates.

Packchanian, A. (1957). **Chemotherapy of African sleeping sickness. II. Chemotherapy of experimental *Trypanosoma gambiense* and *Trypanosoma rhodesiense* infections in mice (*Mus musculus*) with a new antibiotic, amphomycin.**—*Antibiot. & Chemother.* **6,** 684-691. [Spanish sum. pp. 727-728. Author's summary modified.] **2039**

Sodium amphomycin, a new antibiotic, was found to be effective against experimental African human trypanosomiasis.

Mice infected with a lethal inoculum of *T. gambiense* were cured by i/p injection of amphomycin, 150 mg./kg. body wt. daily for 4 days; lethal *T. rhodesiense* infection in mice was cured with 100 mg./kg. daily for 4 days. After the first therapeutic dose, 24 hours after infection, trypanosomes disappeared from the circulating blood. Subsequent microscopic examination at daily or weekly intervals revealed no evidence of relapses. All survivors that remained free from trypanosomes were considered cured and were discarded after 60 to 240 days. The controls (40 infected with *T. gambiense* and 60 with *T. rhodesiense,*) all died from acute trypanosomiasis in 3–5 days.

Davey, D. G. (1957). **The chemotherapy of animal trypanosomiasis with particular reference to the trypanosomal diseases of domestic animals in Africa.**—*Vet. Rev. Annot.* **3,** 15-36. **2040**

A review of recent trends in chemotherapy. The phenanthridinium compounds (including dimidium, ethidium and antrycide), suramin complexes, "Berenil", "Tozocide", and the

problem of drug resistance are dealt with. There are recommendations of the drug most suitable for each of the species of domestic animals.

HOARE, C. A. (1957). **The classification of trypanosomes of veterinary and medical importance.**—*Vet. Rev. Annot.* **3,** 1-13. **2041**

A revised classification, with explanatory notes, a table, and drawings of various species.

DEANE, L. M. & DEANE, M. P. (1954). Encontro de leishmanias nas vísceras e na pele de uma raposa, em zona endêmica de Calazar, nos arredores de Sobral, Ceará. **[Visceral and skin findings of leishmaniasis in a fox. Case report.]**—*Hospital, Rio de J.* **45,** 419-421. [Abst. from English summary.] **2042**

Numerous leishmania were found in the spleen, liver and bone marrow and particularly in the unbroken skin of a fox, *Lycalopex vetulus,* caught in the State of Ceará, Brazil, where kala-azar is endemic. The fox may therefore act as a reservoir host of *Leishmania donovani* in the region.

CORRIAS, A., BABINI, A., MARCHISIO, M. & MOLINARI, G. (1957). La conservazione delle cellule e dei tessuti viventi con l'impiego delle basse e bassissime temperature. (Primi esperimenti di conservazione a −79°C di colture di *Trichomonas genitalis bovis*). **[Effects of low temperatures on living cells and tissues. (Maintenance of cultures of *Trichomonas genitalis bovis* [*Tr. foetus*] at −79°C.).]**—*Vet. ital.* **8,** 3-19. [English, French and German summaries.] **2043**

Three-day cultures in the medium described by Plastridge were used in these experiments. Test tubes containing the cultures in glucose serum broth, in Plastridge medium, in Plastridge medium plus 5% glycerol, and in Plastridge medium plus polyvinyl pyrrolidone were subjected to rapid and slow freezing at −79°C. The organisms were destroyed by rapid freezing but survived the slow method. Best results were obtained with Plastridge medium, with or without glycerol. On thawing only 5–20% showed normal motility but growth was resumed after 48–72 hours.—T.E.G.R.

CARANTI, V. (1956). Note ed osservazioni personali sui rapporti tra paralisi di Marek e coccidiosi. **[Relationship between fowl paralysis and coccidiosis.]**—*Profilassi* **29,** 133-141. [French summary.] **2044**

The aetiology of fowl paralysis is discussed and an account given of a small outbreak. The affected birds, aged 2–6 months, showed progressive paralysis of the legs and wings. There was a steady loss of condition, in spite of maintained appetite, and diarrhoea which inreased towards the terminal stages of the disease. P.M. findings included thickening and grey coloration of the axillary and lumbo-sacral plexuses and of the posterior roots of the spinal nerves, and oedema, hyperaemia and punctiform haemorrhages in the intestinal tract, especially the caeca. Examination of the faeces revealed heavy coccidia infestation. Bacterial infection and vitamin deficiency were ruled out and transmission experiments gave negative results. The condition responded to sulphonamide therapy. In view of these findings it is considered that the nervous symptoms were due to coccidiosis.—T.E.G.R.

ITAGAKI, K. & TSUBOKURA, M. (1955). **Studies on coccidiosis in fowls. IV. On the agglutination of merozoites.**—*Jap. J. vet. Sci.* **17,** 139-143. [In English. Japanese summary.] **2045**

Merozoites collected from the caeca of chicks which had been infected with *Eimeria tenella* were concentrated by centrifugation and resuspended in 0·85% saline with 0·5% formalin as a preservative. Repeated injections were made intravenously into the ears of rabbits. Immune serum was collected and heated at 56°C. for 30 min. Phenol (0·5%) was added as a preservative. Slide and tube agglutinations were observed using suspensions of merozoites prepared as above. It was noted that spontaneous agglutination of merozoites was liable to occur. Agglutination was observed under the microscope, the test being controlled by observation of the effect of normal sera from rabbits and of an immune serum prepared by the injection of caecal contents of normal chickens. Results suggested a specific reaction, the antibody being destroyed by heating to 75°C. Agglutination between small numbers (usually 5–10) of merozoites was the rule. No definite type of clumping was observed. It is suggested that serological investigations may assist the specific identification of coccidia.—S. BRIAN KENDALL.

CUCKLER, A. C. & MALANGA, C. M. (1956). **The effect of nicarbazin on the development of immunity to avian coccidia.**—*J. Parasit.* **42,** 593-607. [Authors' summary modified.] **2046**

Chickens exposed to infections with graded numbers of *E. tenella, E. acervulina* or *E. necatrix* oocysts and fed nicarbazin were as resistant as infected, untreated surviving controls to the lethal effects of a challenge infection. The feeding of nicarbazin significantly reduced the pathological effects of avian coccidiosis and suppressed oocyst formation, but did not interfere

with the development of acquired immunity. Histopathological studies showed that the drug suppressed the development of the second generation schizonts and their merozoites. The presence of these retarded schizonts produced a marked inflammatory reaction in the intestinal tissues. This reaction appears to have stimulated immunity and may account for the relatively high degree of resistance to re-infection with coccidia found in chickens fed nicarbazin.

COOPER, D. M. & SKULSKI, G. (1956). **Effects of feeding furazolidone to fowls. I. Effect on body weight and sexual development in cockerels.** — *J. comp. Path.* **66**, 299-311. [Authors' conclusions modified.] **2047**

COOPER, D. M. (1956). **Effects of feeding furazolidone to fowls. II. Effect on egg production, fertility and hatchability of low level feeding to pullets.**—*Ibid.* 312-316. [Author's conclusions modified.] **2048**

I. Furazolidone (N-(5-nitro-2-furfurylidene)-3-amino-2-oxazolidone) was fed continuously to male chicks from day-old to maturity and to males from 6 to 18 weeks of age in concentrations of 0·005 to 0·02% of the ration. It was fed at 0·04 to 0·08% to 5-week-old males for 14 days and to mature males for 21 days. Measurements of the effect on body wt., comb and wattle wt., and testicular development were recorded, and the testes were examined histologically. Histological changes were demonstrable in the testes even where there were no significant differences in the weight of the testes. Some changes were still apparent even 12 weeks after withdrawal of the low conc. of the drug. In both immature and mature males fed the drug in high conc. for short periods, both gross and microscopic lesions were present even 4 weeks after withdrawal of the drug, although some tubules did show a normal arrangement of cells. It had not been determined whether the birds fully recover from the effects produced by the drug.

II. Furazolidone was fed continuously to pullets at 0·01, 0·015 and 0·02% of the ration from the 14th to the 26th week of age. Egg production was recorded for 24 weeks and fertility and hatchability for 13 weeks. There was no significant effect on body weight, food consumption, date of first egg, or egg production as compared with controls. Using untreated cockerels, fertility and hatchability were not adversely affected.

ISHIHARA, T. & ISHII, S. (1954). **Studies on the piroplasmosis by *Theileria mutans* in Japan. I. Clinical changes in the initial stage of the infection. II. On the development of *Theileria mutans* in the erythrocytes of cattle.**—*Abstr. Proc. Suiyokai, Tokyo* 1956. pp. 29-30 & 30-31. [In English.] **2049**

I. In experimentally infected calves the appearance of protozoa in the blood (10–13 days after infection) was preceded by pyrexia and anaemia which subsided when the blood was invaded, and recurred a month later.

II. The morphological changes undergone by *Theileria mutans* are discussed. In view of the temperature reaction before the appearance of the parasite in the blood stream in artificial infection it is considered likely that there is a pre-erythrocytic stage when multiplication may occur.—T.E.G.R.

NETTO, A. R. & RIBEIRO, I. F. (1955). Sôbre as variações dos índices de hemoglobina, proteína total do plasma e do valor hematócrito no decurso da premunição com os agentes das plasmoses bovinas. **[Changes in the haemoglobin, plasma protein and haematocrit values during premunization of cattle against piroplasmosis and anaplasmosis.]** — *Rev. Fac. Med. vet., S. Paulo* **5**, 317-324. [English summary.] **2050**

The mean haemoglobin, haematocrit and total plasma protein values of 20 cattle were assessed before premunization and thereafter at weekly intervals for 8 weeks. During the first 6 weeks the Hb dropped from 14·2 to 9·4 g./100 and then rose to 10·9 g./100 by the 8th week; the haematocrit varied from 39·6 to 27·9% and at the 8th week it was 32·7%. There were no marked variations in the protein values.

—T.E.G.R.

See also abst. **2177** (di-phenthane 70 in bovine coccidiosis).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

BEATON, W. G. (1956). **Summary of information on foot and mouth disease in Africa south of the Sahara, 1951-55.** — *Bull. epiz. Dis. Afr.* **4**, 287-307. [In French pp. 323-328.] **2051**

Early in 1956 a questionnaire was circulated by the Inter-African Bureau of Epizootic Diseases. From the 37 replies received from 43 territories a summary has been compiled outlining the present status of the disease and the attitude of the veterinary authorities in the respective territories. The information is pre-

sented in the form of tables together with a map. The types of virus involved have not been identified in all territories, but in areas south of latitude 15°S (south of Northern Rhodesia) the prevalent types are S.A.T. 1 and 2 with occasionally S.A.T. 3. The prevalent types in East Africa, including the Republic of the Sudan, are Vallée "A" and "O". Vallée "O" is recorded from Northern Nigeria. Madagascar has always been free from the infection. Prophylactic immunization is not carried out in any territory except in the presence of an outbreak of economic importance and vaccination is confined to the European farming areas of Kenya where it is at present voluntary. Wild ruminants are a reservoir of infection in certain territories.

—H. Scott McTaggart.

Marazza, V. (1957). Sulla tipizzazione del materiale aftoso proveniente dai focolai infetti. **[Typing of foot and mouth disease virus.]**—*Vet. ital.* **8,** 20-32. [English, French and German summaries.] **2052**

Of 533 samples subjected to the c.f. test 382 were positive. The types of virus were: A, 318; O, 63; and C, 1. Virus was identified, by g. pig inoculation, in 45 of 88 negative samples.—T.E.G.R.

Wehmeyer, P. (1957). **Experimental examination of complexes with foot and mouth disease virus.**—*Acta path. microbiol. scand.* **40,** 143-150. [In English. Author's summary modified.] **2053**

It was demonstrated that glycocoll can increase the antigenic effect of foot-and-mouth disease vaccine. With glycocoll the virus forms a complex which appears to consist of one molecule of virus surrounded by several molecules of glycocoll. Electrophoretic studies of solution containing complexes revealed anomalies. Such anomalies were further studied in electrophoretic experiments with complexes formed between protamine and albumin and between protamine and nucleic acid.

Veckenstedt, A. (1956). Über die Haltbarkeit des Maul-und-Klauenseuche-Virus im Plankton. **[Viability of foot and mouth disease virus in plankton.]**—*Arch. exp. VetMed.* **10,** 517-534. **2054**

In attempts to trace the origin of isolated outbreaks of F. & M. disease in coastal districts, the author studied the survival of F. & M. disease virus in plankton in sea water. The virus appeared to become bound to the plankton in such a way that the virus was preserved for longer than it would be in sea water without plankton. Thus plankton was capable, under favourable conditions, of spreading the virus over relatively large distances.—R.M.

Likhachev, N. V., Bazulev, P. M. & Syurin, V. N. (1955). **[Resistance of foot and mouth disease virus when attached to bacteria.]**—*Trud. nauchno-kontrol. Inst. vet. Preparatov* **5,** pp. 57-65. [In Russian.] **2055**

The authors discussed previous Russian work on the increased resistance of pox and influenza viruses when adsorbed on bacteria, and studied the behaviour of F. & M. disease virus when adsorbed on *Bacillus* [*Chromobacterium*] *prodigiosum*. A 1:200 virus emulsion was centrifuged at 2,500 r.p.m. for 15 min. The supernatant was added to suspensions of agar cultures of the bacillus having an opacity equivalent to 20^9 or 25^9 organisms. The mixture was shaken and kept at 22°C. Virulence of the virus was tested by i/d inj. into the plantar cushion of g. pigs. Whereas the supernatant fluid alone lost its virulence after 5 days, the virus mixed with bacteria was still fully virulent after 45 days. Another experiment was said to demonstrate that the virus was more resistant to ultra-violet light when attached to the bacillus [no figures given]. Vacuum-dried mixtures of virus and bacillus remained virulent after storage for 2 years at 6° to 8°C., 4 months at 18° to 20°C. and partial virulence was retained after 2 months at 37°C.—R.M.

Skinner, H. H. (1957). **The virus of vesicular stomatitis in small experimental hosts. I. White mice, cotton rats, chick embryos and young chickens. II. Guinea-pigs and rabbits.** —*J. comp. Path.* **67,** 69-86 & 87-105. [Author's conclusions modified.] **2056**

I. Subclinical infections with the virus of vesicular stomatitis were detected in white mice by demonstration of a solid immunity against intracerebral inoculation of 100 or more i/c $I.D._{50}$. Such infections occurred in mice which had received 9 i/c $I.D._{50}$ of virus intracerebrally or in mice above a certain age which had received virus by the nasal route or which had in all probability been infected by this route while feeding on infective material. All the subclinical infections detected could be explained in this way and none to airborne infection from close contact with clinically infected mice.

Large doses of virus given by the intraperitoneal or subcutaneous routes to mice 1–3 weeks old caused a low proportion of clinical infections and surviving mice were rarely immune to an intracerebral test. With increasing age less mice inoculated by the nasal route became infected

clinically and with the NJ.M strain this occurred at an earlier age than with the Ind.C strain. In mice over one year old susceptibility to infection with the NJ.M strain by the intracerebral route also appeared to diminish.

Cotton rats were susceptible to infection.

Chick embryos 7, 8, 9 and 10 days old were equally susceptible to infection by the chorioallantoic method with the Ind.C strain, but with the NJ.M strain embryos became more resistant to infection by this method after 8 days. Virus was recovered from the brain of older chick embryos which survived for up to a week after inoculation by the chorioallantoic method. The Ind.C strain was passaged 15 times in newly hatched chicks by intracerebral inoculation of infective brain tissue.

II. From a close study of the clinical syndrome in g. pigs infected with the virus of vesicular stomatitis by the intradermal route 3 characteristics were noted which can be exploited to increase the value of this animal as an experimental host.

The marked rise in rectal temp. at the time of formation of a primary lesion was absent in infection with foot and mouth disease virus and it is suggested that this could be used as a differentiating characteristic.

In g. pigs inoculated on both metatarsal pads with the same infective material the two primary lesions always erupted simultaneously or within a day of each other. Secondary lesions never appeared within 2 days of the eruption of the first primary lesion and in only 4% of the g. pigs which developed secondary lesions did they appear within 3 days. It is possible, therefore, to count each inoculated matatarsal pad as a site of reaction and thus to obtain 2 observations from a single g. pig.

The low frequency with which secondary lesions occur in g. pigs, and the early production of an immunity following the infection of a single pad, enable a rapid cross immunity test to be carried out by confining the primary infection to a single pad and using the second pad for inoculation of the test virus.

It was confirmed that subclinical infections can arise from close contact with infected g. pigs. The route of infection in such cases could be intranasal as g. pigs were infected subclinically by this route with only 10 or less intradermal infective doses.

Rabbits inoculated intra-epithelially on the tongue were as sensitive as g. pigs inoculated intradermally on the metatarsal pads for the detection of minimal infective doses of virus. The eruption of primary tongue lesions was accompanied by inappetence, but only a slight rise in body temp. The lesions healed very rapidly and were often followed in a few days by secondary tongue lesions, the severity of which appeared to be inversely proportional to the primary lesion.

DMITROV, N. (1957). **[Control of rabies in animals in Bulgaria.]**—*Veterinariya, Moscow* **34,** No. 1. pp. 83-86. [In Russian.] **2057**

During 1945–54 10,517 animals died from rabies in Bulgaria. Of these 79·02% were dogs, 7·86% cattle, 5·63% pigs, 2·24% sheep, 2·2% horses, 1·33% cats, 0·91% donkeys and 0·81% goats. In 1949 a large proportion of dogs were strays. These were destroyed in a campaign which commenced in 1944. In addition, other dogs were taxed and vaccinated, and the number of dogs allowed on farms was restricted. Vaccine of ovine origin was imported from Hungary and during 1949–55 2,100,000 dogs were inoculated. During 1955 only 11 cases in dogs were reported, and these were mainly in border districts. At one anti-rabies station the number of human beings treated fell from 444 in 1949 to 38 in 1951.—R.M.

NINOMIYA, A. (1955). **Histopathological studies on the salivary glands of rabic dogs, with special reference to the parotid and mandibular glands. Appendix: On cervical lymph nodes.**—*Gunma J. med. Sci., Japan* **4,** 117-127. [In English.] **2058**

From the histological examination of the salivary glands of 15 dogs with rabies, N. concluded that degeneration of epithelial cells was the primary response of the tissues to the virus. These changes were seen only in the mandibular glands, and not in the parotid glands. In the cervical lymph nodes there was swelling of reticulo-endothelial cells and fatty infiltration; this may represent a general reaction of the body to infection rather than a specific change due to rabies.—R.M.

BLAKEMORE, F. & ABDUSSALAM, M. (1956). **Morphology of the elementary bodies and cell inclusions in swine pox.**—*J. comp. Path.* **66,** 373-377. [Authors' conclusions copied *verbatim*.] **2059**

Elementary bodies of the swine pox virus resemble those of other pox viruses. They are slightly larger and longer than those of vaccinia virus. Cytoplasmic and intranuclear inclusions occur in epidermal cells in the early stages of the disease. These observations provide fresh evidence that swine pox belongs to the pox group of diseases.

MAYR, A. & WITTMANN, G. (1956). Zur Pathogenese der Hühnerpockeninfektion. I. Das klinische und histologische Bild der Geflügelpockeninfektion im bebrüteten Hühnerei bei verschiedenen Stämmen. [**Pathogenesis of fowl pox. I. Clinical and histological picture in incubated eggs inoculated with different strains.**]—*Mh. Tierheilk.* **8**, 264-281. **2060**

The chorioallantoic lesions produced by two strains of fowl pox virus—H.P.F. (egg-adapted) and H.P.B.—and one strain of pigeon pox virus were compared. Fowl pox virus can be differenitiated from other pox viruses by the primary lesions which they produce on the chorioallantoic membrane. Individual strains of fowl pox may be identified by such characteristic histological changes as their ability to cause necrosis or vascular changes. Pigeon pox virus causes no such lesions on the chorioallantoic membrane but it produces characteristic mesodermal oedema. The secondary phase of fowl pox infection is characterized by the appearance of secondary foci on all extra- and some intra-embryonic organs. These occur rarely in pigeon pox infections but they may be utilized in the differentiation of various strains of fowl pox virus; strains differ in the time of appearance and the degree of generalization of the sceondary lesions. A number of environmental and virus-specific factors further influence the development of both primary and secondary lesions.—W. G. SILLER.

OLSEN, M. W. (1956). **Fowl pox vaccine associated with parthenogenesis in chicken and turkey eggs.**—*Science* **124**, 1078-1079. **2061**

Eggs laid during a 4-month period by 42 pullets were examined after 10 days' incubation for parthenogenetic development. The pullets were then vaccinated, 13 with pigeon pox and 29 with fowl pox vaccine. All eggs laid during the next 4 months were likewise examined for parthenogenesis. The increase in the incidence of some degree of parthenogenesis was from 1·8% to 2·9% in the pigeon pox vaccinated group and from 1·0% to 3·2% in the fowl pox vaccinated group. In a second, similar series, eggs were examined before and after vaccination with fowl pox virus; the increase in parthenogenetic development was even greater, from 1·62% to 15·9%, or nearly ninefold.

3,110 eggs laid by 2 groups of turkeys were examined for parthenogenesis over a period of 3 months. One group was composed of 16 non-vaccinated turkeys and the second group of 49 birds that had been vaccinated against fowl pox at 7 weeks and again at 30 weeks of age, sister birds being represented in each group. Of the eggs laid by the first group, 24·4% showed parthenogenetic development after 10 days' incubation; the corresponding figure for the eggs of the vaccinated group was 31·8%.

It is not known how the virus may exert its effect, nor whether it is a direct or indirect one.—E.V.L.

LEVKOVICH, E. N., SARMANOVA, E. S. & DUMINA, A. L. (1955). **[Experimental study of the rôle of animals in the dissemination of the virus of tick-borne (Spring-Summer) encephalitis in natural foci.]** In "Natural foci of human diseases and regional epidemiology". Leningrad: Medgiz. [In Russian.] [Abst. in *Rev. appl. Ent.* Ser. B **44**, 153. (1956) slightly modified.] **2062**

Experiments were carried out to ascertain the period during which the virus of the tick-borne spring-summer encephalitis occurring in the Soviet Far East circulates in the blood of animals from which ticks, notably *Ixodes persulcatus*, are likely to acquire it. Viraemia occurred from the third to the fifth day after infection in mice and voles (*Microtus arvalis*) and for up to 15 and 8 days, respectively, in hedgehogs and ground squirrels (*Citellus major*), infected by s/c injection, and from the third to eighth and third to tenth days in voles and chipmunks (*Eutamias*) infected by nymphs of *I. persulcatus*. Uninfected larvae of *I. persulcatus* acquired the virus from one of the infected hedgehogs. The mice, voles and hedgehogs are susceptible to the encephalitis, but the ground squirrels and chipmunks are not, and the prolonged symptomless preservation of the virus in chipmunks may be of great importance, as they are very common in the Siberian forest and are heavily infected by larvae and nymphs of *I. persulcatus*. Viraemia for periods of 4–15 days was also produced in birds, so that they too could be a source of infection for the larvae and nymphs. Infection of sheep and goats by inoculation resulted in the presence of the virus in their blood for up to 10 days, and it passed into the milk of the goats.

As acquired immunity in hosts of the tick may affect the spread of the virus in nature, experiments with immune g. pigs and white mice were also made. Uninfected ticks did not acquire the virus from immune animals on which they were fed simultaneously with infected ones or after the animals had been inoculated with it. Infected ticks fed on immune hosts showed a considerably reduced titre of virus in the next stage of metamorphosis, but retained enough to transmit it to their progeny.

CHAMBERLAIN, R. W., KISSLING, R. E., STAMM, D. D. & SUDIA, W. D. (1957). **Virus of St. Louis encephalitis in three species of wild birds.**—*Amer. J. Hyg.* **65**, 110-118. [Authors' summary modified.] **2063**

English sparrows, cowbirds (*Molothrus ater ater*) and red-winged blackbirds (*Angelaius phoeniceus phoeniceus*) were infected with St. Louis encephalitis virus by subcutaneous inoculation and by the bite of infected *Culex tarsalis* mosquitoes. Viraemia was low, especially in the two last-named species, undetectable for the most part in blood diluted 1:10. This amount of virus in the blood was adequate for infection of normal *C. tarsalis* ingesting it, however. Virus multiplication of over a million-fold was demonstrable in the mosquito. A complete transmission cycle (chicks—*C. tarsalis*—wild birds—*C. tarsalis*—chicks) was accomplished.

The antibody response of the birds was weak following infection. The virus was isolated 38 days after infection from gizzard tissue of a cowbird but not from other organs.

RICHARDS, S. H. & EVELETH, D. F. (1957). **Preliminary investigations with a lymphocytic choriomeningitis-like virus recovered from cattle.**—*Vet. Med.* **52**, 167-168 & 174. [Authors' conclusions modified.] **2064**

Three cattle brains, submitted for rabies diagnosis, were found to be negative on microscopic examination and mouse inoculation tests. Mice and g. pigs inoculated with fluid from the ventricles of the cattle developed symptoms indicative of lymphocytic choriomeningitis. Skunks may have been the vectors in the transmission of the disease to cattle. A raccoon injected with the brain and spleen of the mice developed similar symptoms in 24 days. Studies are continuing on raccoons and skunks injected with brain material from the original cattle.

KASCHULA, V. R., BEAUDETTE, F. R. & BYRNE, R. J. (1957). **The adaptation of equine influenza virus to infant mice by the intracerebral route.**—*Cornell Vet.* **47**, 137-143. [Authors' summary modified.] **2065**

Equine influenza virus was first adapted to unweaned hamsters intraperitoneally, then to hamsters by combining intracerebral and intraperitoneal inoculation of pooled liver and brain tissue, and finally to mice. This was accomplished in 13 total passages, and the virus has so far been passaged 65 times in baby mice. It has been proved to be that of equine influenza by serum-neutralization tests in mice and by the development of neutralizing and complement-fixing antibodies in horses injected with infected mouse brain material.

I. KOROTKIKH, A. V. (1955). **[Causes of the regional distribution of equine infectious anaemia.]**—*Trud. voronezh. oblast. nauchno-issled. Vet. opuit. Stants.* No. 4. pp. 59-68. [In Russian] **2066**

II. KOROTKIKH, A. V. (1955). **[Epidemiology of equine infectious anaemia.]**—*Ibid.* pp. 69-74. [In Russian.] **2067**

I. In the Voronezh region almost all cases of equine infectious anaemia occurred in the northern wooded steppe, which also had low-lying and marshy districts: only sporadic cases occurred in the southern steppe. The soil of the northern zone was deficient in calcium, and there was hypocalcaemia in the horses, but the greater number of blood-sucking insects in the wooded steppe was probably the principal cause of the restricted distribution of the disease.

II. K. outlined the epidemiology of E.I.A. since it was introduced into the Voronezh region in 1932. During 1932–40 the disease was confined to the wooded steppe. It spread to the southern steppe with the movement of infected horses during the war, but did not become established there. Incidence in the wooded steppe has been reduced by the regular dressing of horses with insecticides during the period when blood-sucking insects were active. [See also *V.B.* **23**, 108].—R.M.

I. DOLL, E. R., BRYANS, J. T., MCCOLLUM, W. H. & CROWE, M. E. W. (1957). **Isolation of a filterable agent causing arteritis of horses and abortion by mares. Its differentiation from the equine abortion (influenza) virus.**—*Cornell Vet.* **47**, 3-41. **2068**

II. BRYANS, J. T., DOLL, E. R., CROWE, M. E. W. & MCCOLLUM, W. H. (1957). **The blood picture and thermal reaction in experimental viral arteritis of horses.**—*Ibid.* 42-52. [Authors' summaries modified.] **2069**

I. A filtrable agent isolated from a foetus aborted during an outbreak of an infectious disease in a group of pregnant mares was differentiated from the equine abortion virus. Viral arteritis of horses is suggested as the name of the disease produced by the agent, which is designated equine arteritis virus. The name is based on specific lesions in the small arteries of fatally infected horses.

Data are presented to show that the agent previously described as equine abortion virus should be regarded as a respiratory virus of horses. In young horses, the virus causes a

febrile reaction and rhinitis. The principal histological lesions are rhinitis and interstitial pneumonitis. The most consistent and severe lesions in the foetus also occur in the respiratory tract. The disease caused by this virus is designated viral rhinopneumonitis of horses and the agent as equine rhinopneumonitis virus.

The arteritis virus produces some of the symptoms and lesions described previously for equine influenza, epizootic cellulitis, or pinkeye. Also, the equine rhinopneumonitis virus produces symptoms and lesions that have been described for equine influenza. The rhinopneumonitis virus and the arteritis virus have distinct properties and produce different specific lesions. Neither is related to the viruses of human and swine influenza. It is proposed, therefore, that use of the term influenza be discontinued in descriptions of respiratory diseases of horses.

There is no cross protection between the rhinopneumonitis virus and the arteritis virus.

Infection by either virus causes leucopenia. That resulting from rhinopenumonitis virus infection is due principally to depression of neutrophiles. That resulting from arteritis virus infection is due to depression of both neutrophiles and lymphocytes, particularly lymphocytes.

Symptoms of uncomplicated infection by the arteritis virus were fever, conjunctivitis, palpebral oedema, congested and haemorrhagic nasal mucosa, oedema of the legs, respiratory difficulty, colic, diarrhoea, depression, muscular weakness, and prostration. Thirteen of 39 horses died. Known uncomplicated infection by the rhinopneumonitis virus was manifested only by fever, slight depression, conjunctivitis, mild respiratory catarrh and, infrequently, oedema of the legs and diarrhoea. Either virus may predispose to the bacterial complications commonly associated with the complex of respiratory disorders described as equine influenza.

Gross lesions in young and adult horses that died from uncomplicated infection by the arteritis virus were: palpebral oedema; congestion and haemorrhage of the upper respiratory tract; oedema of the lungs and mediastinal tissues; pleural effusion; haemorrhages on the serous surfaces; excessive fluid in the peritoneal cavity; oedema of the visceral organs; catarrhal enteritis; catarrhal, haemorrhagic, and diphtheritic colitis; typhlitis; haemorrhage and infarction in the spleen; and degenerative changes in the liver and kidneys. The equine rhinopneumonitis virus is not known to have caused fatal infection in young or adult horses.

Either virus may cause severe losses from abortion, and some of the gross lesions in aborted foetuses are similar, but the severe oedema of the lungs and focal necrosis of the liver indicate rhinopneumonitis virus. Histopathologically intranuclear inclusion bodies in the bronchial epithelium and alveolar, hepatic and reticuloendothelial cells specifically differentiate rhinopneumonitis virus infection of the foetus from arteritis virus infection. Inclusion bodies were not demonstrated in the tissues of foetuses or young or adult horses infected fatally by the arteritis virus.

Abortions due to infection by the rhinopneumonitis virus occur after the convalescent period of the mare, whereas those caused by arteritis virus infection were closely associated with the febrile and convalescent period. Abortion from arteritis virus infection is apparently due to active infection of the foetus rather than to fever, toxaemia, or debility of the mare.

The arteritis virus is filtrable through Seitz EK pads and Selas O2 porcelain filters. It is not inactivated by penicillin or streptomycin. It is present in the lungs and spleen of aborted foetuses, in the blood of horses during the febrile period, and in the spleen of horses that died 5 or 6 days after inoculation. It has not caused detectable infection of mice, rabbits, g. pigs, hamsters, or chick embryos. Sera from horses recovered from arteritis virus infection did not inhibit agglutination of fowl r.b.c. by human and swine influenza viruses, Newcastle disease virus, or mumps virus. The same sera did not neutralize infectivity for chick embryos of viruses of the mumps, Newcastle disease, and the influenza group.

II. The thermal reaction and the blood picture of 37 horses experimentally infected with equine arteritis virus are described. The disease was not complicated by secondary bacterial infection except in one animal which had a terminal streptococcal septicaemia.

The fever is continuous, beginning 12–96 hours after inoculation and persisting for 4–9 days. Morning remissions approaching normal body temp. occurred in older horses during the first 2 or 3 days of fever. The blood picture is a panleucopenia with the lymphocytes undergoing the most marked depression. Leucopenia occurred in most horses 24–72 hours after fever appeared, but in others it was present at the onset of fever and in two cases 1 and 2 days before fever occurred. The total leucocyte and neutrophile curves in older horses were biphasic in character. Lymphocytes tended to drop further than neutrophiles in all animals, and the lymphocyte curve was not biphasic in any group. Leucopenia persisted for 4–10 days. The lowest leucocyte counts per cu. mm. recorded were: for total leucocytes, pregnant

mares 5,700, barren mares 2,950, weanlings 2,700, neutrophiles in pregnant mares 4,165, barren mares 2,214, weanlings 1,500, lymphocytes in pregnant mares 618, barren mares 270, and weanlings 945. Expression of leucopenia as the greatest percentage reduction of the average number of cells per cu. mm. gave the following values: total leucocytes, pregnant mares 48%, barren mares 38%, weanlings 40%; for neutrophiles, pregnant mares 51%, barren mares 29%, weanlings 28%; lymphocytes, for pregnant mares 74%, barren mares 56%, and weanlings 53%. Although the blood picture changed more rapidly in peracute cases, significant quantitative differences between surviving and fatal cases were not apparent, and haemograms of fatal cases paralleled those of survivors.

MORNET, P., GILBERT, Y., ORUE, J., THIÉRY, G. & MAMADOU, S. (1956). La "peste des petits ruminants" en Afrique Occidentale française. Ses rapports avec la peste bovine. **[A rinderpest-like disease of sheep and goats in French West Africa.]**—*Rev. Élev.* **9,** 313-335. [English and Spanish summaries.] **2070**

The absence of reports of rinderpest in sheep and goats in Africa in the past makes this account of more than usual interest. Outbreaks of rinderpest in sheep, and perhaps more frequently in goats, have been reported on many occasions in India and Ceylon, but not from Africa. Since the introduction of the goat-passaged rinderpest virus for the immunization of cattle it has been known that African breeds of goats varied very greatly in their susceptibility to the goat-passaged virus, so much so that goats to be used as virus producers had to be selected with some care as goats from some areas proved to be quite unsuitable for this purpose because of their very high resistance to infection.

In this article Mornet and his colleagues report on a disease of goats which has been known in the Ivory Coast, Dahomey and parts of Senegal since 1940 and which at first seems to have been confused with bluetongue.

The clinical features and lesions both macroscopic and microscopic closely resemble those of rinderpest and are described in detail with some excellent illustrations. In the field, infection does not seem to spread from infected goats to cattle.

An experimental study of the condition shows that infection is readily transmitted to susceptible goats by inoculation of blood, the incubation period and temperature reaction being similar to those seen in rinderpest of catlte.

Injection of this virus into cattle caused only a thermal reaction without clinical evidence of disease, but cattle so inoculated were immune when subsequently challenged with virulent rinderpest virus.

The virus was neutralized by bovine rinderpest immune serum.

There seems to be little doubt that this virus disease of sheep and goats is very closely related to rinderpest; further studies are planned. This article merits the close attention of all workers on rinderpest particularly in Africa.

BROTHERSTON, J. G. (1956/57). **Rinderpest: Some notes on control by modified virus vaccines. I. Goat-adapted virus. II. Lapinised virus.**—*Vet. Rev. Annot.* **2,** 95-106; **3,** 45-56. **2071**

A review of the literature, with special reference to goat-adapted and lapinized rinderpest virus.

BUSSON, A. (1955). Le coryza gangréneux. Traitement par la sulfamézathine. **[Treatment of bovine malignant catarrh with sulphamethazine.]** — *Thesis Paris,* (*Alfort*). pp. 50. **2072**

B. described the treatment of bovine malignant catarrh in 6 cattle with 33⅓% sulphamethazine sodium. Four animals recovered, and 2 died. He recommended a dose of 100 ml. per 300 kg. body wt., one half of the dose to be given intravenously, and the other half subcutaneously. In serious cases a second, identical treatment should follow 36 hours later. Mild cases may receive a second, precautionary dose, but it should be reduced by half and given only by the s/c route.—M.G.G.

GREIG, A. S. (1956). **Contagious ecthyma of sheep. I. Attempts to infect other hosts.**—*Canad. J. comp. Med.* **20,** 448-452. [French summary.] **2073**

Three strains of contagious pustular dermatitis virus isolated from severe outbreaks proved infective for experimental lambs and kids, but failed to produce any significant lesions in mice, g. pigs or chick embryos. Small areas of redness developed around the sites of inoculation in rabbits without any other signs of infective processes.—R. V. L. WALKER.

SHIRLAW, J. F. (1956). **A preliminary note on successful vaccination of sheep in Kenya against progressive enzootic pneumonia (Laikipia lung disease).**—*Bull. Epiz. Dis. Afr.* **4,** 57-59. In French pp. 123-125. **2074**

The pathology of Laikipia lung disease of sheep in Kenya resembles that of Jaagsiekte in S. Africa, of Montana sheep disease in America,

of "bouhite" in France, of "maedi" in Iceland and of pulmonary adenomatosis in Peru.

A large virus has been isolated from early lesions and successfully passaged in the yolk sac of the chick embryo. Serological (complement-fixation) tests have shown this virus to be causally related to the disease [a note since received from the author states that the egg-passaged virus evokes specific lesions in susceptible sheep after a prolonged incubation period]. Experimental transmission has also been obtained by subcutaneous injection of fresh infected lung material, the incubation period being from 4–6 months.

A vaccine prepared by treating infected lung emulsion with 1% formalin has given very good results in lambs—1% mortality in vaccinated lambs as compared with 30% in the controls. Inoculation of lambs at 1 month of age and again at 3 months is recommended.

ANSELL, R. H. (1957). **Attenuation of Nairobi sheep disease virus in the mouse brain.**—*Vet. Rec.* **69,** 410-412. [Author's summary slightly modified.] **2075**

The virus was propagated in mouse brain for 14 serial passages, during which its pathogenicity for sheep remained unchanged. Between the 14th and the 22nd passage attenuation occurred and the virus proved capable of immunizing sheep against challenge with virulent virus. A possible diagnostic serum neutralization test is indicated.

MATHEWS, J. & BUTHALA, D. A. (1957). **Hog cholera protection tests with swine serum fractions. I. Hyperimmune hog cholera antiserum.**—*Cornell Vet.* **47,** 179-187. [Authors' summary modified.] **2076**

The albumin–gamma globulin complex formed by heating pig serum was similar in nature to the complex of albumin and γ-globulin found in heated horse serum. Protection tests in pigs, using 5 sera and fractions thereof indicated that the protection afforded by fractions containing unmodified γ-globulin was equivalent to that of whole serum. Fractions containing modified γ-globulin or electrophoretically free from γ-globulin gave erratic results in protection tests.

OKANIWA, A., SASAHARA, J., ISHITANI, R. & SUGIMURA, K. (1954). **Studies on the lapinized hog cholera virus. Pathological observation on the hogs inoculated with lapinized virus and ROVAC.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 20-21. [In English.] **2077**

A study was made of histological changes in pigs inoculated with lapinized virus and with ALD strain virus and in naturally infected pigs. Tissue changes in the c.n.s., lymph nodes, spleen and liver were, on the whole, milder in pigs inoculated with lapinized virus than in those in the other groups. Staining of reticulo-endothelial cells by i/v inj. of trypanblue was more pronounced in the case of ALD virus than in the case of lapinized virus.—T.E.G.R.

I. ANON. (1957). **[Report of conference on the intradermal administration of swine fever vaccine.]**—*Veterinariya, Moscow* **34,** No. 2. pp. 92-93. [In Russian.] **2078**

II. KLYUCHAREV, D. V. & RAFALOVICH, A. E. (1957). **[Intradermal vaccination of pigs against swine fever.]**—*Ibid.* pp. 22-23. [In Russian.] **2079**

III. GRACHEV, A. R. & USHMAEV, N. L. (1957). **[Administration of reduced doses of crystal violet swine fever vaccine with glycerol.]**—*Ibid.* pp. 28-30. [In Russian.] **2080**

I. A conference in Moscow discussed the results of trials of i/d inoculation of glycerolized crystal violet swine fever vaccine. It was recommended that pigs over 2 months of age be given 1 ml. vaccine into the base of the ear flap, repeated after 7–8 days in the other ear. Piglets less than a month old could be given either (a) three subcutaneous inj. each of 2·5 ml. at intervals of 6–7 days, followed by 5 ml. after a further 14 days; or (b) 1 ml. intradermally, repeated a week later and again at the age of 2 months. Duration of immunity from the i/d method has not yet been established, but it was believed to be at least a year in adults and 6 months in youngstock. Necrosis was observed at the site of i/d inj. in 15–20% of pigs, 7–10 days after inoculation, the lesion measuring 0·5–2 cm. in diam. or exceptionally 5 cm. diam. Transient and uncomplicated fever (up to 41°C.) and depression occurred after inoculation in about 10% of pigs.

II. A small experiment demonstrated that the temperature curve of pigs inoculated i/d with 0·5–1 ml. glycerolized crystal violet vaccine was similar to that of pigs inoculated s/c with 2·5–5 ml. of the same vaccine.

III. Swine fever broke out in the Krasnodar region in March 1956 (the region having had no outbreaks since 1952). Among the control measures was the intradermal vaccination of 310,000 pigs with glycerolized crystal violet vaccine. Each pig was given 1 ml., repeated after 7 days. Pigs under 2 months were given half doses. Immunity was present by the 10th day after the second inj. Administration of hyperimmune serum reduced the efficacy of vaccination.

—R.M.

LANNEK, N. & BÖRNFORS, S. (1957). **Immunity to enzootic pneumonia in pigs following recovery from the disease.**—*Nord. VetMed.* **9,** 91-98. [In English. German and Swedish summaries. English summary modified.] **2081**

Pigs which had recovered from experimental virus pneumonia proved to be strongly resistant to a second challenge with the same infective material. This resistance was not due to their higher age (24 weeks against 7 weeks). Controls of the same age which had had no previous exposure, all developed pneumonia. In a heavily infected herd the majority of purchased animals probably develop pneumonia. By the time they are slaughtered many of these have recovered. Under favourable hygienic conditions this fraction may include most of the previously sick animals. The criteria of pneumonia were based on X-ray examination during life and P.M. examination of slaughtered pigs.

LANNEK, N. & WESSLÉN, T. (1957). **Evidence that the SEP agent is an etiological factor in enzootic pneumonia in swine.** — *Nord. VetMed.* **9,** 177-190. [In English. German and Swedish summaries. English summary modified.] **2082**

It was confirmed in a series of experiments that intranasal-intratracheal inoculation of the "Swine Enzootic Pneumonia" (SEP) agent, previously described by the authors [*V.B.* **25,** 107], causes pneumonia lesions in pigs. After the agent had been propagated in kidney tissue culture the pneumonic lesions were purely microscopic. After isolation and cultivation in pig lung or kidney tissue cells the inoculation resulted in macroscopic pneumonia. A SEP strain which was previously found to produce only microscopic lesions, caused macroscopic pneumonia after culture in suspended tissue cells culture passages. The microscopic and macroscopic changes were morphologically identical with those of the enzootic virus pneumonia. After i/p inoculations of tissue culture passaged SEP agent a pneumonia and serositis syndrome appeared. The results indicate strongly that the SEP agent is at least one aetiological factor in enzootic virus penumonia of swine.

UNDERDAHL, N. R. & KELLEY, G. W. (1957). **The enhancement of virus pneumonia of pigs by the migration of *Ascaris suum* larvae.**—*J. Amer. vet. med. Ass.* **130,** 173-176. [Authors' summary modified.] **2083**

In pigs inoculated with virus pneumonia during the migration of ascaris larvae through the lungs, pulmonary consolidation was 10 times as extensive as in pigs which received only the virus. The lung lesions of pigs given ascaris plus virus were typical of those seen in more severe field cases. The authors recommended measures to control ascariasis in order to reduce the effect of virus pneumonia. They suggested that migrating ascaris larvae might be used as an aid for the isolation of virus pneumonia and other respiratory disease viruses.

SASAHARA, J., HAYASHI, S., MUNEKATA, K., HIRASAWA, K., KATO, K., OKANIWA, A. & ISHITANI, R. (1954). **Studies on a viral disease of swine with nervous symptoms occurring in the winter of 1954 in Japan.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 17-18. [In English.] **2084**

A disease affecting pigs aged 2–5 months occurred in Aomori Prefecture and in Tokyo. It was characterized by nervous symptoms —muscular spasms, convulsions, rotatory movements and dulness. Coughing, retarded growth and hind leg weakness were also observed in some cases. Two strains of haemagglutinating virus were isolated on chick embryo. The sera of pigs from both districts had antibodies against this virus. Both strains were serologically similar to the virus isolated from the lungs of pigs with influenza-like disease in 1953. Histopathological changes were observed in the c.n.s., lungs, liver, spleen, lymphatic system, urinary system and intestinal tract. The virus has a widespread distribution in Japan and has been isolated from mice, pigs and human subjects. [See also *V.B.* **26,** 2300.]—T.E.G.R.

I. SASAHARA, J., HAYASHI, S., KUMAGAI, T., HIRASAWA, K., MUNEKATA, K., OKANIWA, A. & KATO, K. (1954). **On a virus (HVJ) newly isolated from the swine. III. On the experimental infection in young swine.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 15-16. [In English.] **2085**

II. SASAHARA, J., KUMAGAI, T. & KATO, K. (1954). **On a virus (HVJ) newly isolated from the swine. IV. On the experimental infection of several laboratory animals.** — *Ibid.* pp. 16-17. [In English.] **2086**

III. SASAHARA, J., HAYASHI, S. & KATO, K. (1954). **On a virus (HVJ) isolated from the mouse and guinea pig.**—*Ibid.* pp. 18-19. [In English.] **2087**

I. Young pigs in 3 weight groups (8–10 kg., 18–22 kg., and 40–45 kg.) were inoculated with the virus (infected allantoic fluid) by the intranasal, intraperitoneal, intravenous and intracerebral routes. In some of the pigs there was a slight temperature, a cough, tremors, nasal

discharge and diarrhoea. In the 8–10 kg. group there was cessation of growth, severe emaciation and some mortality. Blood changes included the appearance of myelocytes and meta-myelocytes, a slight increase in neutrophiles and monocytes and, in some cases, a moderate leucopenia. P.M. changes were observed in the lungs, liver, spleen, kidneys, lymph nodes and glia cells. The virus was recovered from the lungs and tracheae. Haemagglutination-inhibiting, complement fixing and neutralizing antibodies were demonstrated.

II. Mice, young rabbits, adult rats, hamsters and g. pigs were all susceptible to the virus isolated from pigs with influenza-like disease. The virus multiplied and produced lesions in the lungs of these animals, but did not develop in any of the organs of the 40-day chick although it produced HI antibody.

III. Cross HI tests showed that the various strains of virus isolated from the lungs and tracheae of mice and g. pigs with respiratory symptoms had the same antigenic structure as, and was similar in some biological properties to the virus isolated from the lungs of pigs with influenza-like disease [see II. above], but did not have a common antigenic fraction with strains of the viruses of influenza, swine influenza or Newcastle disease. Experimental infection was set up in mice, g. pigs, and pigs with two strains and one strain each respectively.

—T.E.G.R.

JAKSCH, W. (1956). Die Primidon- (Mysoline-) Therapie bei der nervösen Form der Staupe. **[Primidone (mysoline) treatment of nervous distemper.]**—*Wien. tierärztl. Mschr.* **43**, 802-814. [English, French and Italian summaries.] **2088**

81 dogs presenting the nervous stage of distemper were treated with primidone ('Mysoline') 50 mg./kg. daily in two divided doses, for a minimum period of 1–2 weeks. Some of the animals received as much as twice that daily dosage, initially, without harmful effects. The symptoms were controlled in 11 out of 35 cases of encephalitis, and improvement was seen in 4 out of 12 cases of myelitis. The best effect was obtained in those showing masticatory and epileptiform attacks as the only symptom (9 out of 11 controlled), and improvement in this type of attack also occurred in a significant proportion of cases where other symptoms were not affected by the treatment. Adequate dosing for several days or weeks, and individual adjustment of the dose, were regarded as important for success. While producing substantially the same results as phenobarbitone and phenobarbitone + phenytoin, primidone was preferred to these drugs on account of its low toxicity. Excessive doses were liable to produce paresis and ataxia in the hind limbs. Primidone was also used prophylactically in a dosage of 15–20 mg./kg. once daily, in 19 cases of "hard pad" disease. Nervous symptoms occurred in only 31·5%, compared with a normal incidence—in J.'s experience—of 78% of untreated animals.

—G. P. MARSHALL.

I. MUIRHEAD-THOMSON, R. C. (1956). **The part played by woodland mosquitoes of the genus *Aëdes* in the transmission of myxomatosis in England.**—*J. Hyg., Camb.* **54**, 461-471. [Abst. from author's summary.] **2089**

II. MUIRHEAD-THOMSON, R. C. (1956). **Field studies of the role of *Anopheles atroparvus* in the transmission of myxomatosis in England.**—*Ibid.* 472-477. [Author's summary copied *verbatim*.] **2090**

III. ANDREWES, C. H., MUIRHEAD-THOMSON, R. C. & STEVENSON, J. P. (1956). **Laboratory studies of *Anopheles atroparvus* in relation to myxomatosis.**—*Ibid.* 478-486. [Authors' summary copied *verbatim*.] **2091**

I. Despite the presence of large numbers of *Aedes* (particularly *A. cantans* and *A. annulipes*) and their persistent attacks upon man, the mosquitoes (except in one case) were not attracted to healthy domestic rabbits exposed in the woods. *Aedes* can have little, if any, part in the spread of myxomatosis. Observations made in the cool summer of 1954 were confirmed in the hot summer of 1955. In the laboratory, the *Aedes* were reluctant to feed on normal, healthy rabbits but fed readily (round the eyes and on the nose) on normal anaesthetized rabbits or comatose myxomatous rabbits. Biting experiments indicated that *Aedes* may remain infective for up to 36 days after an infective blood meal. Infected *Aedes* were recovered from woods containing myxomatous rabbits, and tame rabbits infected by the bites of these mosquitoes developed myxomatous tumours on the nose. Although some *Aedes* were thus feeding on wild myxomatous rabbits, the evidence that mosquitoes did not feed on healthy rabbits indicates that *Aedes* were of negligible importance as vectors of myxomatosis.

II. Evidence is presented that outbreaks of myxomatosis among domestic rabbits at Newhaven in Sussex were spread through the agency of *Anopheles atroparvus*. The habits of this insect are discussed in relation to its possible importance as a vector of myxomatosis.

III. *Anopheles labranchiae atroparvus* which have gorged on myxoma-infected rabbits may retain their infectivity for as long as 220

days in a period covering the winter months. Virus titres in infected mosquitoes may also remain stable for several weeks at summer temperatures; virus has been recovered after 36 days in summer. Virus in these *Anopheles* is, in most instances, to be found only in the head and mouthparts. Survival on mouthparts of killed mosquitoes, on the other hand, has been only for a few days. One strain of virus (Newhaven strain) isolated from wild *A. atroparvus* produces flat erythematous lesions on intradermal inoculation into rabbits, and deaths occur later than with typical strains. The possible role of over-wintering *A. atroparvus* as a reservoir of infection of myxomatosis is discussed. The possibility is considered that transmission of infection by *Anopheles* is not purely mechanical, but that limited multiplication occurs in the insects.

Jacotot, H., Vallée, A. & Virat, B. (1956). Étude de quelques souches françaises de virus attenué du myxome infectieux. **[Study of some French strains of attenuated myxoma virus.]**—*Ann. Inst. Pasteur* **90,** 779-783. **2092**

The authors studied 8 attenuated strains of myxoma virus, 7 isolated from domestic rabbits and 1 from a wild rabbit. The reactions of rabbits inoculated with the strains varied, but in most the course of the infection was abnormally long and in some the disease was of the nodular type. The reduction in virulence was not modified by intratesticular passage of a strain in 4 rabbits.—M.G.G.

Rowe, B., Mansi, W. & Hudson, J. R. (1956). **The use of fibroma virus (Shope) for the protection of rabbits against myxomatosis.**—*J. comp. Path.* **66,** 290-298. **2093**

Fibroma virus, in the form of a concentrate vaccine, remained viable for over a year, when kept either frozen at −40°C. or freeze-dried. The fresh vaccine has a life of 14 days.

About 75% of rabbits vaccinated with fibroma virus had a serviceable immunity lasting for about a year. Revaccination every 6 months is recommended for domestic rabbits threatened by myxomatosis.

A comparison between 2 substrains of the Boerlage strain of fibroma virus and 2 different routes of inoculation indicated that the substrain used by Fenner & Woodroofe [see *V.B.* **25,** 2422] produced a better immunity, since 14% succumbed to challenge against 26% vaccinated with the substrain obtained from the Pasteur Institute, Paris. Intradermal inoculation gave better protection than subcutaneous.

No protection was afforded to the young of myxoma-immune does against the inoculation of either fibroma or myxoma viruses. During the first week of life it is unsafe to vaccinate baby rabbits. During the second week, although the offspring of a vaccinated doe can be inoculated without risk, those of a susceptible doe may still die after vaccination.—M.G.G.

Traub, E. (1956). Experimentelle Untersuchungen über die Immunität der Hühner gegenüber der atypischen Geflügelpest (Newcastle-Krankheit). **[Immunity of fowls to Newcastle disease.]**—*Mh. Tierheilk.* **8,** 153-167. **2094**

Antibodies against Newcastle disease virus in hyperimmune serum can be adsorbed *in vitro* at 40·5°C. on to normal fowl erythrocytes. The adsorption rate was found to be dependent not only on the interaction time between r.b.c. and antibody but, more important, on the antibody titre of the serum. The cellular affinity of the antibodies in a given serum runs parallel to the haemagglutination-inhibition titre of that serum. Far from reducing the neutralization titre of the serum it appears that erythrocyte adsorption causes an increase in the titre, by the removal of a non-specific inhibitor.—W. G. Siller.

Pagnini, U. (1956). Primi risultati di vaccinazione antipseudo-pestosa dei pulcini per aerosol con virus attenuato Pagnini. **[Results of aerosol vaccination of chicks against Newcastle disease with an attenuated virus.]**—*Acta med. vet., Napoli* **2,** 69-75. [English, French, German and Spanish summaries.] **2095**

An attenuated vaccine was administered in aerosol to about 15,000 chicks aged 3 days to 2 months. In a certain percentage respiratory symptoms appeared on the 5th day, lasting 2–3 days, after which no further ill effects were observed. H.I. antibody production in about 100 of the test birds was higher than in control groups vaccinated with the same virus by the oculo-nasal route. Small groups of test birds were fed infected material without ill effects.

—T.E.G.R.

Papparella, V. (1956). Azione del cortisone sui pulcini vaccinati per via endonasale con virus pseudo-pestoso attenuato Pagnini. **[Effect of cortisone on chicks vaccinated by intranasal instillation with an attenuated strain of Newcastle disease virus.]**—*Acta med. vet., Napoli* **2,** 415-421. [English and French summaries.] **2096**

The sera of 14 rabbits were subjected to paper electrophoresis and to H.I. tests before and after inoculation with Newcastle disease virus. There was a consistent decrease in albu-

mins and increase in gamma globulins while changes in the alpha and beta globulins were neither regular nor constant. The H.I. titres, in practically all cases, varied directly with the gamma globulins.—T.E.G.R.

Olivo, R. & Badiali, C. (1956). Tentativi di isolamento di virus ornitosici dal piccione. **[Isolation of psittacosis virus from pigeons.]** —*G. Batt. Immun.* **49,** 328-337. [English, French and German summaries.] **2097**

The virus was isolated from 4 out of 15 apparently healthy pigeons at a collecting centre for birds used in shooting competitions. It set up a fatal infection in mice, in the organs of which inclusion bodies were demonstrated by Macchiavello's method; it also stimulated the formation of c.f. antibodies in g. pigs at titres varying from 1:4 to 1:256. It is considered that an asymptomatic form of psittacosis is prevalent at this centre from which the infection is likely to spread to other parts of Italy.

—T.E.G.R.

Furuya, K., Moriwaki, T., Ishii, S., Kurata, K. & Fukusho, K. (1954). **Studies on psittacosis-lymphogranuloma group virus in cattle. I. Isolation of the virus.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 22-23. [In English.] **2098**

Ishii, S., Furuya, K., Moriwaki, T. & Kurata, K. (1954). **Studies on psittacosis-lymphogranuloma group virus in cattle. II. On the C.F.-test.**—*Ibid.* pp. 23-24. [In English.] **2099**

I. A virus belonging to the psittacosis-lymphogranuloma group was isolated from the faeces of 15 of 30 calves and from the nasal discharge of 3 of 10 apparently healthy calves. The virus was also isolated from: the faeces and nasal discharge of a calf with pneumonia; the lesions of 7 of 12 calves with pneumonia; 8 of 13 calves giving negative or doubtful reactions to the c.f. test; and a number of test g. pigs in which no gross pathological changes occurred after intraperitoneal inoculation of material obtained from the calves.

II. Results of the c.f. test with the sera of 24 calves aged 6–12 months are given. Of 15 tested at purchase 8 gave positive and 7 gave negative reactions (5 of these were re-tested and gave a positive reaction). The sera of the remaining 9 were tested 2 months after purchase; all were positive. Of 21 cattle aged 1–4 years 16 were positive and 5 negative. Ether-treated antigen gave stronger reactions than heat treated antigen. Hyperimmune serum was adversely affected by heat.—T.E.G.R.

Brumfield, H. P. & Pomeroy, B. S. (1957). **Direct complement fixation by turkey and chicken serum in viral systems.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 146-149. [Authors' summary slightly modified.] **2100**

A procedure for direct complement fixation with unheated turkey and fowl serum or citrated plasma is outlined. Three viral systems, psittacosis, Newcastle disease and infectious bronchitis were tested. Results are compared with other serological methods.

Buthala, D. A. & Mathews, J. (1957). **Use of cellular cultures of chicken embryo kidney tissue in virus studies.**—*Cornell Vet.* **47,** 143-159. [Authors' summary slightly modified.] **2101**

A system of cell culture using chick embryo kidney tissue was described. Tissues were grown on immersed cover slips, which facilitated staining and mounting for permanent records. Vaccinia, Newcastle disease, vesicular stomatitis, swine influenza, swine pox-like, and mouse encephalomyelitis viruses produced cytopathogenic changes in these cultures. Laryngotracheitis, fowl pox, and avian infectious bronchitis viruses caused no cytopathogenic changes, but the first two viruses apparently proliferated.

Blinov, P. N. (1957). **[Experimental Q fever in horses.]**—*Veterinariya, Moscow* **34,** No. 1. pp. 34-40. [In Russian.] **2102**

Six horses were infected with a suspension of 5 infected yolk sacs from chick embryos in 100 ml. physiological saline: one horse was given 5 ml. suspension s/c and another 15 ml.; one was infected intratracheally with 5 ml., and another with 10 ml.; one was given 10 ml. by stomach tube and another was given 30 ml. by the same route. They all developed a clinical syndrome essentially similar to that encountered in natural outbreaks. Fever was observed only in those horses infected by s/c inoculation. All horses had (a) acute catarrhal gastritis and enteritis, (b) transient catarrhal rhinitis and conjunctivitis, and (c) signs of affection of the bronchi and lungs. One horse, infected s/c, developed serous-catarrhal pneumonia. Agglutinins first appeared in the blood 6 days after s/c infection and 12–18 days after infection by the other routes. At the 25th day titres ranged from 1:20 to 1:160. Complement-fixing antibodies did not appear until the 25th day. One horse, infected with 10 ml. infective suspension by stomach tube, did not develop agglutinins or c.f. antibodies until 26 days after infection. This suggested that horses with acute infection could be serologically negative.—R.M.

ZHMAEVA, Z. M. (1957). **[Domestic fowls as carriers of Q fever in the Turkmen S. S. R.]** —*J. Microbiol., Moscow* **28,** No. 3. pp. 39-41. [In Russian.] **2103**

Rickettsia burneti was isolated from g. pigs inoculated with brain and liver suspensions from 2 cockerels [history not stated] and with washings of egg shells. Inoculation of suspensions of white and yolk of eggs gave negative results. It seemed that fowls might transmit Q fever under the rather primitive conditions in Turkmenistan, where human beings live in close contact with fowls, and eat raw eggs.—R.M.

See also absts. **1985** (identification of Salmonella by means of bacteriophage); **2282** (report, U.S.S.R.); **2284** (book, infectious diseases of fur-bearing animals).

IMMUNITY

WIGGIN, N. J. B. (1957). **Studies on conglutination with special reference to complement, anticomplementary action, and immuno-conglutinin.** — *Abstr. Diss. Univ. Camb.* 1954-55. pp. 59-60. [Abst. copied *verbatim.*] **2104**

Conglutination is the term used to describe the process whereby erythrocytes or other cells which have been sensitized by antibodies and have absorbed complement are caused to clump by a substance called conglutinin found in normal bovine serum. This reaction is the basis of certain useful diagnostic and research procedures because it permits non-haemolytic complements to be used to detect the presence of specific antibodies in serum.

A survey was made of the occurrence of the various factors involved in the conglutination reaction in the sera of horses, cattle, goats, sheep, and cats.

The heat-stability, absorbability and variations in titre of human immuno-conglutinin (conglutinin) were examined.

The conglutinating complement absorption test was shown to be more sensitive than the haemolytic complement fixation test in the detection of antibodies to *Brucella abortus* organisms in human serum.

A number of sera interfere with the fixation of particular complements, and this anticomplementary action was a serious obstacle to the application of the conglutinating complement absorption test to certain diagnostic problems. It was demonstrated that this anticomplementary action can be correlated with the relationship between the ratios of the protein constituents of the serum being tested and the ratios of the protein constituents of the serum being used as the source of complement. Specific methods for dealing with anticomplementary action are described for a number of serum-complement combinations.

The hypothesis is advanced that the solubility of component I of complement is governed by the ratios of the serum proteins, with the lipoproteins probably exerting a predominating influence, provided the electrolyte concentrations are within normal physiological limits.

HAYASHIDA, T. & CHOH HAO LI. (1957). **The influence of adrenocorticotropic and growth hormones on antibody formation.**—*J. exp. Med.* **105,** 93-98. [Abst. from authors' summary.] **2105**

The influence of the two hormones, singly and in combination, on antibody formation against Fraction IA of *Pasteurella pestis* was studied in young adult rats. When ACTH was administered during immunization, in a daily dose just sufficient to prevent body wt. increase over that of untreated, immunized controls, serum antibody levels were significantly depressed. Growth hormone alone increased body wt. markedly, and antibody level slightly. With the same dosage of growth hormone given simultaneously with ACTH body wt. was maintained at a level slightly above that of the controls, and antibody depression did not occur.

BLAKEMORE, F. & GARNER, R. J. (1957). **The maternal transference of antibodies in the bovine.** — *J. comp. Path.* **66,** 287-289. [Authors' conclusions copied *verbatim.*] **2106**

Homologous bovine γ-globulins and presumably antibodies, labelled with ^{131}I appear in the precolostrum within 22 hours of their introduction into the blood-stream and are concentrated by the mammary gland at least 13 times.

I. FRANCIS, G. E., HAWKINS, J. D. & WORMALL, A. (1957). **The use of radioactive isotopes in immunological investigations. X. The fate of some intravenously injected native proteins in normal and immune rabbits.**—*Biochem. J.* **65,** 560-569. **2107**

II. FRANCIS, G. E. & HAWKINS, J. D. (1957). **The use of radioactive isotopes in immunological investigations. XI. The fate of some chemically modified protein antigens in nor-**

mal and immune rabbits.—*Ibid.* 570-573. [Authors' summaries slightly modified.] **2108**

I. Horse-serum γ-globulins and bovine-plasma albumin, both trace-labelled with ^{131}I, were injected i/v into normal rabbits, and their persistence in the blood stream was measured during the first 2 hours after injection. A relatively small loss of the protein is observed during this period, and it has been shown that this loss is frequently brought about by two processes (the 'fast reaction' and the 'slow reaction'). When the same proteins were injected into specifically immunized rabbits, a much larger proportion of the protein was removed from the blood by the fast reaction, probably owing to an *in vivo* precipitin reaction followed by a rapid phagocytosis of the precipitate. The rapid removal of bovine-plasma albumin from the blood of immunized animals has occasionally been observed with rabbits which had received a single immunizing injection of the antigen 14 days previously, but this phenomenon was not observed 2, 5 and 9 days after the immunizing injection. Soluble antibody–antigen complexes containing trace-labelled bovine-plasma albumin are removed from the blood of normal rabbits only slightly more rapidly than the antigen itself. After the injection of antigens into immune rabbits, considerable deposition of antigen occurs in the liver, lungs and spleen. If such small amounts are injected that 80–90% of the injected antigen is removed from the blood in one hour, the recovery of ^{131}I in these organs is almost equal to that which has disappeared from the blood.

II. Highly iodinated γ-globulins and 2-dichloro-ethyl sulphone-treated γ-globulins are removed very rapidly from the blood of normal rabbits after i/v injection. A considerable proportion of the eliminated protein can be recovered in the liver but very little in the lungs. Iodoproteins injected i/v into specifically immunized rabbits are eliminated from the blood at the same rate as in normal animals, but immunized rabbits with good antisera to 2-dichloroethyl sulphone-treated proteins eliminate these proteins from their blood more rapidly than do normal animals. With both antigens the deposition in the liver and lungs is greater in immune animals than in controls. One hour after injection of iodoprotein at least one-third of the radioactivity in the blood is no longer protein-bound. The deiodination of iodoproteins in the tissues renders them unreliable even for comparatively short-term experiments *in vivo*.

HALL, J. G. (1957). **Blood groups in cattle.**—*Abstr. Diss. Univ. Camb.* 1954-55. p. 40. [Abst. copied *verbatim*.] **2109**

The sera of some cattle, particularly those that have received blood transfusions, contain antibody which combines with the erythrocytes of other cattle. With one exception, a reliable and sensitive method of demonstrating this combination is the haemolytic reaction, using rabbit complement.

Absorption with red blood cells of unknown antigenic properties shows that the antisera consist of mixtures of several specific antibodies. Five of these specific antibodies were isolated; apparently single, by the use of Ayrshire blood. Similar experiments using Shorthorn blood, however, show that two of these reagents contain not one but many specificities.

The antigens detected by these five reagents are distributed among related Ayrshire cattle as though they were controlled by genes with a dominant Mendelian behaviour. Two of the inferred genes are probably carried on the same chromosome.

The value of the published work in this field is estimated in the light of the results and the methods of the present work.

ANDRESEN, E. (1957). **Investigations on blood groups of the pig.**—*Nord. VetMed.* **9,** 274-284. [In English. German and Danish summaries. Author's summary modified.] **2110**

The author discussed previous work on blood groups of the pig, and gave an account of his own studies.

Seven different blood group test sera against factors, designated E, F, G, H, I, J and K have been produced by iso-immunizations. Inheritance studies showed these to be inherited as dominant characters. These test sera are now being compared with those from two other laboratories.

GRANDADAM, J. (1956). Le pouvoir histaminopexique du sérum des animaux domestiques. **[Anti-histamine activity of the serum of domestic animals.]**—*Thesis Paris*, (*Alfort*) pp. 52. **2111**

The serum of a horse with pulmonary emphysema and of 2 dogs, one with eczema and the other with a specific allergy, had no anti-histamine activity. Anti-histamine activity was demonstrated in the serum of 2 healthy horses, 4 dogs and 21 cattle with no allergic conditions. On the other hand, the serum of 3 normal horses and 4 cattle had no anti-histamine activity. This was true also of a dog with suspected piroplasmosis and a dog with leptospirosis. It was con-

cluded, therefore, that this test for allergic conditions is of less value in veterinary than it is in human medicine.—M.G.G.

MONGAR, J. L. & SCHILD, H. O. (1957). **Inhibition of the anaphylactic reaction.** — *J. Physiol.* **135,** 301-319. [Authors' summary modified.] **2112**

The release of histamine in anaphylaxis was inhibited by a large number of substances including metabolic inhibitors, antipyretics and related compounds such as phenol. These substances generally potentiate histamine release by octylamine and compound 48/80. It is concluded that the mechanism by which these histamine liberators release histamine is different from that in anaphylaxis. Inhibition by phenol is not due to inhibition of the antigen-antibody reaction, but of a subsequent, probably enzymic, process initiated by the antigen-antibody reaction. Phenol does not inhibit desensitization. The substances which inhibited histamine release in anaphylaxis also inhibited oxygen consumption and muscular contractility.

See also absts. **1974-1975** (S. abortus-equi); **1987-1991 & 2001** (Br. melitensis vaccine); **2006-2008 & 2012** (leptospirosis); **2014** (Cl. welchii Type D killed vcacine); **2017** (accidental infection in man with tuberculin and Strain 19); **2023** (epizootc lymphangitis); **2045** (agglutination of E. tenella merozoites); **2050** (anaplasmosis and piroplasmosis); **2051-2055** (F. & M. disease); **2057** (rabies); **2061** (fowl pox); **2070-2071** (rinderpest); **2074** (Laikipia lung disease); **2075** (Nairobi sheep disease); **2076-2080** (swine fever); **2081** (virus pneumonia of pigs); **2092-2093** (myxomatosis); **2094-2096** (Newcastle disease); **2100** (c.f. test in avian viral systems).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

RUDENKO, P. A. (1957). **[Control of warble fly in Kazakhstan.]**—*Veterinariya, Moscow* **34,** No. 1. pp. 40-43. [In Russian.] **2113**

Surveys during 1949–52 revealed that 77% of cattle were infested with warbles. 469,880 larvae were counted in 116,873 cattle. Commencing January-March (depending on the climate of each region) cattle were dressed 2–3 times with D.D.T. in oil, at intervals of 20–30 days. In one region the proportion of infested hides fell from 10% in 1952 to 5·5% in 1953 and 3·9% in 1955; in another region comparable figures were 15, 8·2 and 4·2% respectively. —R.M.

FINZI, G. (1957). Sulla ipodermosi bovina prenatale e sulla migrazione transplacentare di uova e larve. **[Pre-natal infestation with *Hypoderma bovis*. Transplacental migration of eggs and larvae.]**—*Progr. vet., Torino* **12,** 62-66. **2114**

H. bovis infestation in young calves is discussed. A calf (aged about 8 months) which had never been at pasture or exposed to the fly was heavily infested with larvae in various stages of development. In view of the fact that ova and larvae circulate in the blood stream of the host, it is considered that in such cases infestation occurs *in utero* through the placenta. —T.E.G.R.

SIMONELLA, P. (1956). Qualche notizia recente sul trattamento dell'estro nasale negli ovini. **[Treatment of *Oestrus ovis* infestation in sheep.]**—*Vet. ital.* **7,** 1142-1144. **2115**

Some recent methods of treatment are reviewed. These include carbon tetrachloride; 3% aq. soln. of liquor cresol saponatus; derris emulsion; and lindane, in somewhat high concentration. Attention is drawn to the fact that with each method described there is a temporary depression of the olfactory sense and treatment should not, therefore, be applied during the lambing season as dams are likely to have difficulty in identifying their lambs.—T.E.G.R.

KILPATRICK, J. W. & SCHOOF, H. F. (1957). **House fly control in dairy barns with residual treatments of phosphorus compounds.**—*J. econ. Ent.* **50,** 36-39. **2116**

The results of field tests with 6 organophosphorus compounds are reported. Residual application of malathion–sugar formulations at the rate of 200 mg. of malathion and 500 mg. of sugar/sq. ft. gave 1–8 weeks of control. Chlorthion and "Am. Cyanamid 4124" at 100 mg./sq. ft. plus a sugar additive (250 mg./sq. ft.) gave 6–8 weeks' control. Diazinon at a similar rate gave 9–11 weeks' control in 1954 when weather was unfavourable for flies. "Bayer 21/199" alone at 50 mg./sq. ft. and in combination with D.D.T. (50 mg./sq. ft.) did not provide control. A single application of "Bayer L 13/59"–sugar formulation at 100 mg. of "L 13/59" and 250 mg. of sugar/sq. ft. gave 7 weeks of control. Spot treatments (50% of normal coverage) with "Am. Cyanamid 4124" gave poor control in one dairy and 5 weeks' control in another, the difference being due to environmental factors.—D. POYNTER.

LINDQUIST, A. W. (1957). **Effectiveness of organo-phosphorus insecticides against houseflies and mosquitos.**—*Bull. Wld Hlth Org.* **16,** 33-39. [French summary. Author's summary modified.] **2117**

Data from laboratory and field tests indicate that organo-phosphorus insecticides are effective substitutes for D.D.T. and other chlorinated-hydrocarbon insecticides against resistant

houseflies and culicine mosquitoes, but that the residual effect is of shorter duration than that of D.D.T. and they would probably be less effective for anopheline control.

BARNES, J. M., HAYES, W. J. & KAY, K. (1957). **Control of health hazards likely to arise from the use of organo-phosphorus insecticides in vector control.**—*Bull. Wld Hlth Org.* **16,** 41-61. [French summary. Authors' summary modified.] **2118**

The widespread use of D.D.T. and the chlorinated hydrocarbon group of insecticides for the control of mosquitoes and flies has led to the emergence of resistant strains of flies. Where the D.D.T. group of insecticides is ineffective for control of resistant insects the use of the organophosphorus group of insecticides may be an alternative. Their use under the conditions in which D.D.T. has been safe might carry serious risks to the health of the men who apply them. The authors indicate what these dangers are, how they manifest themselves, and how they might be controlled. Four methods of blood-cholinesterase determinations in the laboratory and in the field are described.

See also absts. **2010** (isolation of leptospira from Dermacentor marginatus); **2062** (tick-borne (spring-summer) encephalitis); **2089-2091** (role of mosquitoes in transmission of myxomatosis); **2132** ("gastin" against Gasterophilus); **2282** (report, U.S.S.R.).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

LOUW, J. H. & WILKIE, W. (1956). **Infestation by *Fasciola hepatica*.**—*S. Afr. med. J.* **30,** 1157-1165. **2119**

The distribution, clinical features, diagnosis and treatment of animals and man for *F. hepatica* are described and 2 cases of human infestation are reported. Animal infestation is common in certain summer-rainfall areas of S. Africa and human infestation may be less rare than is generally believed. In endemic areas the condition should be suspected in persons with obscure hepato-biliary disease, especially if associated with anaemia, eosinophilia or bleeding from the intestinal tract. Diagnosis is established by the presence of ova in the duodenal aspirate or stools of the patient. Complement-fixation and intradermal tests may be of some value. Treatment of human cases with emetine is specific and usually successful, but 2 courses at an interval of 1–2 months may be necessary.—D. POYNTER.

STIREWALT, M. A. & HACKEY, J. R. (1956). **Penetration of host skin by cercariae of *Schistosoma mansoni*. I. Observed entry into skin of mouse, hamster, rat, monkey and man.**—*J. Parasit.* **42,** 565-580. [Authors' summary modified.] **2120**

Adult human and monkey skin and tail skin of haired mice were penetrated by over 85% of the applied cercariae; ear and body skin of adult hairless mice, body skin of adult hamsters and of 4- to 5-day-old mice, by 73 to 78%; body skin of 1- to 2-day-old mice and tail skin of adult mice, by 65 and 62%, respectively; and body skin of 5-day-old rats, by 34%. Breaks, bends, angles and frank openings in the stratum corneum all featured in cercarial penetration. Entry sites of choice varied with the skin from wrinkle walls in human skin to hair follicles in tail skin of haired mice. Times spent in exploration were shortest in skin with numerous, well-distributed, favourable entry sites, one min. or less on human skin; and longest, averaging over 4 min., on body skin of 5-day-old rats. Actual entry times were about 3 min. into body skin of 1- or 2-day-old mice and ear and body skin of adult hairless mice, and about 7 min. into body skin of 5-day-old rats, tail skin of adult hairless mice, body skin of adult hamsters, and adult human skin. Patterns of penetration and migration were similar on all the skins. Penetration involved orientation to the entry site, close oral attachment, great muscular activity and copious glandular secretion. Migration was accomplished by a combination of muscular and glandular activity with constant oral exploration until yielding intercellular avenues were encountered.

AIROLDI, M. & BELLI, L. (1956). Contributo allo studio dei danni economici provocati dall'idatidosi nei bovini. **[Economic losses caused by hydatid disease in cattle.]**—*Vet. ital.* **7,** 1209-1215. **2121**

The condition was encountered in 1,811 of 11,707 adult slaughter cattle examined during 1953–55. In 1,422 animals the lungs and liver were affected; in 240 the lungs alone were affected, and in 149 the liver alone. It is considered that, besides the economic loss due to condemnation of the affected organs, there is also a reduction in the ratio between live and carcase weight.—T.E.G.R.

VASILEV, A. A. (1957). **[Treatment of hymenolepid infestations in ducks and geese.]**—*Veterinariya, Moscow* **34,** No. 1. pp. 43-46. [In Russian.] **2122**

Various anthelmintics were tried on 1,194 ducks (636 of them 45–90 days old) and 586

geese (562 of them 54–113 days old), infested with *Dicranotaenia* spp., *Diorchis* spp., *Hymenolepis paramicrosoma* and *Drepanidotaenia lanceolata*. The most effective was "filixan" (a male fern extract) administered in bolus form at a dosage of 0·3 g./kg. body wt. for ducks and 0·45 g./kg. for geese, or mixed with the food at 0·35 g./kg. body wt. for ducks and 0·45 g./kg. for geese. Tin arsenate at 0·06–0·2 g./kg. and aminoacriquine at 0·3 g./kg. were less effective and were potentially toxic. Fat-free flour from pumpkin seeds at a dosage of 30–50 g./kg. body wt. was quite effective against *Drepanidotaenia* in geese, and moderately effective against hymenolepid infestations in ducks. Arecoline at 1 mg./kg. for ducks and 2 mg./kg. for geese was effective, but caused toxic symptoms, sometimes fatal, in 20% of adult ducks treated.—R.M.

SADUN, E. H. & NORMAN, L. (1956). **Effect of single inocula, of varied size, on the resistance of hamsters to *Trichinella spiralis*.**—*J. Parasit.* **42,** 608-612. [Authors' summary modified.] **2123**

Results of experiments involving the use of 362 hamsters of about the same age and weight inoculated with graded single inocula up to 8,000 larvae indicate that hamsters are susceptible to *T. spiralis*. No significant difference in the ratio between the number of larvae recovered and the size of inoculum was observed in groups receiving between 125 and 1,000 larvae. The number of adult worms lost from the intestine as a result of sloughing of the intestinal mucosa depended on the size of inoculum and occurred during the first week. The LD_{50} was about 850 larvae. The size of the inoculum had an inverse relationship to the average time of survival. In general, death occurred primarily at the time of the muscular phase when the inoculum was 3,000 larvae or less, and at the time of the intestinal phase when the inoculum was 4,000 larvae or more. The regularity of the results suggests the possibility of using lethal infections as an additional tool for immunological and chemotherapeutic studies.

FURNELL, M. J. G. & KERSHAW, W. E. (1957). **An outbreak of trichinosis in man in Limerick, in 1956.**—*Trans. R. Soc. trop. Med. Hyg.* **51,** 4. **2124**

Three cases were diagnosed, one of which proved fatal. Rats from the city refuse dump and from bacon factories, and cats and dogs were examined. Ten of 136 rats from the city dump were infected. Examination of foxes, badgers and mice was negative.—M.G.G.

LAI, M. (1956). La strongilosi gastro-intestinale dei ruminanti in Sardegna. II. Gli strongili dell'abomaso. **[Gastro-intestinal strongylosis of ruminants in Sardinia. II. Strongyles of the abomasum.]**—*Profilassi* **29,** 100-108. [French summary.] **2125**

In a survey 269 out of 574 cattle, 298 of 430 sheep and all of 355 goats were found infested with parasites of the following species: *Haemonchus contortus, Ostertagia ostertagi, O. circumcincta, O. trifurcata, O. pinnata, O. lyrata, Cooperia punctata, C. onchophora, Trichostrongylus extenuatus, T. capricola, T. vitrinus* and *T. colubriformis*.—T.E.G.R.

DOUVRES, F. W. (1956). **Morphogenesis of the parasitic stages of *Ostertagia ostertagi*, a nematode parasite in cattle.**—*J. Parasit.* **42,** 626-635. **2126**

As a result of infecting 5 new-born calves with larvae of *O. ostertagi*, D. described in detail and figure the development of the parasitic stages.—D. POYNTER.

ROSE, J. H. & MICHEL, J. F. (1957). **Quantitative studies on the contamination of pasture herbage with husk worm larvae.**—*J. comp. Path.* **67,** 57-68. [Authors' conclusions modified.] **2127**

The authors studied the effect of the dissemination of faeces on the appearance of *Dictyocaulus viviparus* larvae on herbage. The extent to which the herbage could be contaminated varied with the consistency of the faeces. The numbers of larvae recovered from herbage over which faeces had been spread were associated with the effect of climatic factors on the disintegration of the spread faeces. Where pats 1 to 3 weeks old were in such a condition that they could be spread by mechanical means, larvae were recoverable from the herbage. The implications of the conclusion that larvae only reach the herbage when faeces do so are discussed.

MICHEL, J. F. (1956). **Studies on host resistance to dictyocaulus infection. III. Experiments on the site of the protection mechanism.**—*J. comp. Path.* **66,** 338-344. [Author's conclusions slightly modified.] **2128**

Experiments with *D. filaria* in sheep and small laboratory animals designed to investigate the site of the mechanism by which worms are prevented from establishing themselves in the lungs of a resistant animal are described. Neither the intestinal wall nor the lung appears to be the primary site of this mechanism and the evidence suggests that in the resistant host the larvae are destroyed or lost in the mesenteric lymph nodes or the lymphatic vessels.

CAVIER, R. (1956). Les propriétés anthelminthiques de quelques esters de l'acide cinnamique et de dérivés voisins. [**Anthelmintic properties of esters of cinnamic acid.**]—*Bull. Soc. Pat. exot.* **49,** 631-636. **2129**

n-Butyl cinnamate given to mice at 100 mg./kg. gave 100% efficiency against oxyurids. It proved successful for oxyuriasis in young children and being non-toxic it has a place in the treatment of such infestation.

—D. POYNTER.

PANEBIANCO, F. (1956). Il test di Thorn in cavie sperimentalmente infestate con uova embrionate di *Neoascaris vitulorum*. [**Thorn's test in experimental *Neoascaris vitulorum* infection in g. pigs.**]—*Profilassi* **29,** 220-227. **2130**

The criterion of positivity in this test is a 50% reduction of eosinophiles 4 hours after a single i/m injection of ACTH. In experimentally infected g. pigs a single i/m inj. of 2 mg. of ACTH did not give a positive reaction. The eosinophile count, however, was eventually lowered by further administration of a similar dose at the 4th and 8th hours. A single dose of 4 mg. gave positive results in 50% while a marked drop in the eosinophile count followed further administration of a similar dose at the 4th and 8th hours. A single dose of 6 mg. was followed by positive results after 4 hours in all the test animals and, in a high percentage, the drop in the eosinophile count was still very marked at the 12th hour. It is considered that the stage of infection at which the test is carried out has no bearing on results.—T.E.G.R.

KELLEY, G. W., JR. & SMITH, L. J. (1956). **The daily egg production of *Ascaris suum* and the inability of low levels of aureomycin to affect egg production and embryonation.**—*J. Parasit.* **42,** 587. [Copied from research note.] **2131**

Three 120 lb. pigs infected with *Ascaris suum* were observed for 15 days. Daily worm egg counts were made and daily egg production of the ascarids was computed. One pig, receiving Aureomycin at the rate of 10 mg. per pound of feed, consumed about 66 mg. of the antibiotic daily. The daily egg count was 13,709 EPG and daily egg production was calculated to be 11,600,000. Seven female ascarids were recovered at necropsy; thus each had produced about 1,600,000 eggs daily. A second pig received Aureomycin at the rate of 50 mg. per pound of feed and consumed about 284 mg. of the antibiotic per day. The daily egg count for this pig was 1,309 EPG. Only 1 female was recovered at necropsy and she had produced about 1,600,000 eggs per day. The third pig received no Aureomycin. It lost its infection on the 9th day. The daily egg count for the 9 days was 845 EPG and about 1,000,000 eggs were deposited daily. Although no females were recovered it is assumed that this pig harbored a single female until the ninth day. The eggs were embryonated in a mixture of feces and granular charcoal maintained at 30°C. Embryonation was unaffected by the Aureomycin treatment. Ninety-six per cent of the eggs collected on the 7th day of the trial contained motile larvae after they had been incubated 13 days. Almost all the eggs collected on the 15th day were embryonated after 16 days of incubation (based on observation of 50 eggs selected at random).

EGYED, M. & HOLLÓ, F. (1956). **Investigation of toluene and gastin for effectiveness in ascaridosis.**—*Acta vet., hung.* **6,** 419-427. [In English. Russian summary.] **2132**

"Gastin" (one capsule contains 6·4 ml. benzene, 0·096 ml. allyl isothiocyanate, 1·36 ml. petroleum, 0·16 ml. creosote) was ineffective against ascarids in all out of 12 horses, [which were presumably given one capsule each]. The compound was effective against *Gasterophilus* spp.

Toluene at 0·2–0·4 ml./kg. was found efficient against the ascarids of 2 dogs and 30 horses.—D. POYNTER.

DISSANAIKE, A. S., DISSANAIKE, G. A. & NILES, W. J. (1957). **Production of radioactive infective larvae of *Wuchereria bancrofti* in *Culex fatigans*.**—*Exp. Parasit.* **6,** 52-59. [Authors' summary modified.] **2133**

Infective larvae of *W. bancrofti* in *C. fatigans* were successfully tagged with P^{32}. The intake and distribution of this isotope in the mosquito was studied. The possible use of these tagged infective larvae in following their further development in the vertebrate host was discussed.

NELSON, G. S. & HEISCH, R. B. (1957). **Microfilariae like those of *Wuchereria malayi* in dogs and cats in East Africa.**—*Trans. R. Soc. trop. Med. Hyg.* **51,** 90. **2134**

Sheathed microfilariae resembling those of *W. malayi* were found in 7 out of 12 cats and in 1 of 4 dogs on Patta Island, off the coast of Kenya. Sheathed microfilariae (species unknown) were also found in 2 of 10 donkeys. Adult worms resembling *W. malayi* were not recovered.—M.G.G.

ISHIHARA, T. & UENO, H. (1954). **Studies on the summer mange (Kasen disease) of the horse in Japan. I. The parasitic rate and distribution of microfilaria of *Onchocerca cervicalis*.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 28-29. [In English.] **2135**

Pieces of skin, 8 mm. in diameter were resected from horses and examined. The rate of distribution of the parasite in the body was not the same in every case examined. In some clinical cases only a few parasites were demonstrable while numerous microfilariae were seen in specimens from apparently healthy animals. —T.E.G.R.

PATTANAYAK, S., RAGHAVAN, N. G. S. & KRISHNASWAMI, A. K. (1956). **Microfilariae in domestic fowls.**—*Indian J. Malar.* **10,** 261-263. [Authors' summary modified.] **2136**

A description of 3 types of sheathed microfilariae found in fowls in Travancore-Cotchin State. Attempts to infect different local species of mosquitoes failed, and the possibility of ectoparasites being the vectors was being investigated.

I. ISHIHARA, T., YONEMURA, T., ICHIKAWA, S., UENO, H. & OGATA, T. (1954). **Immunological studies on cerebrospinal filariasis in the sheep and goat. II. On the diagnostic value of intradermal reaction.**—*Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 25-26. [In English.] **2137**

II. ISHIHARA, I., ITAKAWA, O., UENO, H., YONEMURA, T. & OGATA, T. (1954). **Immunological studies on cerebrospinal filariasis in the sheep and goat. III. Histopathological changes in the skin tests.**—*Ibid.* pp. 26-27. [In English.] **2138**

I. The intradermal test was applied to goats, 0·1 ml. of an extract of adult *Setaria digitata* being injected into the caudal fold or into the hairless skin of the abdomen. Among 166 apparently healthy goats there were 24 positive and 31 doubtful reactors. Of 12 naturally infected animals 8 gave positive and 3 gave negative reactions; and of 11 artificially infected goats 9 gave positive reactions. The interpretation of results is discussed. It is considered that the test may be of some value in differential diagnosis.

II. A description of the tissue changes which take place at the site of inoculation in the intradermal test. [See I. above.]—T.E.G.R.

ISHIHARA, T., UENO, H., OGATA, T., NINOMYIA, S., KAWADA, S. & MIKI, S. (1954). **On the prophylaxis of cerebrospinal filariasis of sheep and goat, especially by control of *Setaria* in cattle. III. Prophylaxis for the cerebrospinal filariases and the value of this method.** — *Abstr. Proc. Suiyokai, Tokyo,* 1956. pp. 27-28. [In English.] **2139**

It is considered possible to prevent cerebrospinal filariasis in sheep and goats by control of infection in cattle with 1-diethylcarbamyl-4-methylpiperazine dihydrogen citrate.—T.E.G.R.

SOMMERVILLE, R. I. (1957). **The exsheathing mechanism of nematode infective larvae.** — *Exp. Parasit.* **6,** 18-30. [Author's summary modified.] **2140**

The second ecdysis of nematode larvae in sheep was studied. Exsheathment depended on the presence of a dialyzable factor or factors in the alimentary tract. Infective larvae of some species responded initially to these factors in the rumen, whereas others responded initially in the abomasum or small intestine. When larvae were activated by a factor in the alimentary tract, they released "exsheathing fluid", or possibly its precursor, from a region near the excretory cell. The exsheathing fluid acted directly on a circumscribed region of the cuticle, which then broke and enabled the larva to escape.

ROGERS, W. P. & SOMMERVILLE, R. I. (1957). **Physiology of exsheathment in nematodes and its relation to parasitism.**—*Nature, Lond.* **179,** 619-621. [Authors' summary and conclusions slightly modified.] **2141**

The exsheathment which accompanied the change from the free-living to the parasitic form involved stimulation by factors in rumen fluid which appeared to be more effective at low oxidation-reduction potentials. The effect of hydrogen ion concentration on stimulation by rumen fluid may determine the distribution of adult *H. contortus, T. axei* and *T. colubriformis* in the alimentary tract of the sheep. As a result of stimulation exsheathing fluid was secreted by the larvae probably by cells at the base of the oesophagus. The exsheathing fluid was heat-labile and contained a dialysable co-factor. It is possible that the process of moulting in nematodes generally is started by secretions which lead to the formation of a new cuticle during lethargus. Exsheathment may involve a second mechanism of the type described here, but in free-living forms exsheathment may be stimulated by intrinsic factors. Adaptations to suspend exsheathment, except as a response to extrinsic factors provided by the host, may have been important in the development of parasitism in some nematodes.

SMILES, J. & TAYLOR, A. E. R. (1957). **Induced fluorescence with acridine orange in nematode**

embryology. — *Nature, Lond.* **179,** 306-307. **2142**

During examination of suspensions of living cells treated with acridine orange it was found that, apart from nuclear structures fluorescing a bright green, certain cytoplasmic organelles appear red. Also, in actively dividing cells the cytoplasm fluoresces red. This occurs with concentrations of the dye from 1:10,000 to 1:30,000. When the concentration of dye is very much below that required for good colour differentiation, the nucleus and cytoplasm fluoresce a weak olive green. In some cases red granules are just visible in the cytoplasm. As the concentration is increased, the fluorescence of the cytoplasm changes to a bright green, with that of the nuclear structures slightly more intense than the cytoplasm. With concentrations greater than those giving colour differentiation, the nuclear structures change from green, through orange, to red and the cytoplasm fluoresces red.

Studies have been made with oogonia, oocytes and early embryos of *Litomosoides carinii* and similar work is being carried out on *Dirofilaria immitis, D. repens* and *Nippostrongylus muris*: mitosis from metaphase to telophase has been observed in a living ovum of *N. muris* after differential staining with acridine orange and the technique offers a quick and simple method of making chromosome counts. —E.V.L.

CAVIER, R. & DEBELMAS, A. M. (1956). Étude expérimentale du pouvoir anthelminthique de certains aldéhydes aromatiques. **[Anthelmintic properties of some aromatic aldehydes.]**—*Bull. Soc. Pat. exot.* **49,** 637-640. **2143**

From tests of a series of aromatic aldehydes against *Rhabditis macrocerca in vitro* and against *Syphacia obvelata* and *Aspicularis tetraptera* in mice, it was concluded that cinnamic aldehyde was an anthelmintic of therapeutic interest. It was used at a conc. of 0·01M both *in vitro* and *in vivo*, being administered rectally to mice daily for 10 days.—D. POYNTER.

See also abst. **2083** (enhancement of virus pneumonia of pigs by migrating Ascaris larvae).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

BALLARINI, G. (1957). Carcinoma bronchiolare nel cane. I. Studio clinico. **[Pulmonary carcinoma in the dog. I. Symptomatology.]** —*Nuova Vet.* **33,** 11-31. **2144**

ORLANDINI, I. (1957). Carcinoma bronchiolare nel cane. II. Studio radiologico. **[Pulmonary carcinoma in the dog. II. X-ray study.]**—*Ibid.* 31-35. **2145**

FACCINCANI, F. (1957). Carcinoma bronchiolare nel cane. III. Studio anatomo-isto-patologico. **[Pulmonary carcinoma in the dog. III. Pathology.]**—*Ibid.* 36-44. **2146**

I. The literature on the incidence of pulmonary neoplasms is reviewed and a case account is given of the condition in a dog aged 10 years. The clinical symptoms, P.M. findings and diagnosis are discussed. It is considered that the primary tumour was in the right lung with subsequent metastases in the remaining portions of the lungs.

II. Results of a detailed X-ray study of the condition are discussed and illustrations including radiomicrographs are appended.

III. The gross lesions observed P.M. consisted of an irregular and widespread infiltration of the lungs by pale, yellowish-grey fatty tissue. Histologically the neoplasm was identified as carcinoma. Metastases were observed in the peribronchial lymph nodes.—T.E.G.R.

THOMAS, P. T., EVANS, H. J. & HUGHES, D. T. (1956). **Chemically induced neoplasms in fungi.**—*Nature, Lond.* **178,** 949-951. **2147**

Tumours of mushrooms, occurring under accidental or experimental conditions, are illustrated. Tumorous growths were believed to have been produced in 20–30% of the fructifications of the cultivated mushroom *Agaricus campestris* by the accidental introduction of tarry fumes into a commercial mushroom house when a mixture of coke and coal was burned in open braziers to supplement electrical heating. Experimentally, tumorous outgrowths of the pilus of mushrooms were produced by certain volatile mineral oil and coal-tar products, diesel oil being the most effective. An agaric fungus, *Collybia velutipes,* was particularly susceptible to diesel oil, in both vapour and liquid form. Cytological investigation of the tumorous outgrowths of the cultivated mushroom revealed changes characteristic of neoplastic animal cells. The advantages of studying neoplastic changes in fungi are indicated.—E. COTCHIN.

See also abst. **2044** (relationship between fowl paralysis and coccidiosis).

NUTRITIONAL AND METABOLIC DISORDERS

WILLIAMS, V. J. & CHRISTIAN, K. R. (1956). **Rumen studies in sheep. III. The effect of feed intake on the concentrations of microbial end-products.**—*N.Z. J. Sci. Tech.* Sect. A. **38,** 403-406. [Authors' summary slightly modified.] **2148**

Twelve mature sheep were fed dried grass of uniform composition, the ration being decreased at intervals from 1,000 to 400 g./day. Rumen samples were taken at each feed level. A highly significant positive correlation of ruminal volatile fatty acid level with intake was found, the acetic/propionic ratio being significantly higher at the 400 than at the 1,000 g./day level. Ruminal pH, ammonium nitrogen, protein nitrogen and free microbial count were unaffected by change in intake. The dry matter content of the rumen ingesta of 32 sheep varied between 3·8 and 7·5%; the implications of this finding are briefly discussed.

HACKLER, L. R., NEUMANN, A. L. & JOHNSON, B. C. (1957). **Feed from sewage. III. Dried activated sewage sludge as a nitrogen source for sheep.**—*J. Anim. Sci.* **16,** 125-129. [Authors' summary modified.] **2149**

A ration in which 18% of the nitrogen was supplied as dried activated sewage sludge was found equal, as measured by nitrogen retention, to soya bean oil meal and urea in rations of similar crude protein content (11–12%). The total nitrogen of the ration containing sludge had a significantly lower apparent digestibility and a higher biological value.

GRAU, C. R., KRATZER, F. H. & NEWLON, W. E. (1956). **Principles of nutrition for chickens and turkeys.**—*Circ. Calif. agric. Exp. Sta. Ext. Serv.* No. 450. pp. 16. **2150**

This circular is addressed to the poultryman and manufacturer of poultry foods. In the sections on carbohydrates and fats; proteins and amino-acids; vitamins; and minerals, the authors describe the functions that these nutrients perform in the body, the foods which supply them, the symptoms of deficiency, and, in tabular form, the amounts needed at various stages of life.—M.G.G.

ELLIOTT, R. F. & WHITEHILL, A. R. (1957). **Placental and mammary transfer of ingested chlortetracycline in the rat.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 119-122. [Authors' summary slightly modified.] **2151**

Pregnant rats were fed diets containing different amounts of chlortetracycline. When the prenatal diet contained 2 g./kg. the antibiotic was present in the foetal tissues. At levels of 0·5 and 2 g./kg. of diet, detectable amounts of the antibiotic were present in the mammary glands of the dams and in the tissues of the suckled young. The higher level of antibiotic (2 g./kg.) improved the conception rate but did not affect the size of the foetuses or the number of young per litter.

CHENG-CHUN LEE., HARRIS, P. N., ANDERSON, R. C. & CHEN, K. K. (1957). **Absence of thyroid changes by erythromycin in chickens.** — *Antibiot. & Chemother.* **7,** 132-134. [Spanish summary p. 152. Authors' summary slightly modified.] **2152**

Erythromycin fed to chicks, at 5, 10, 15 and 250 g./ton of diet for 6–8 weeks, had no apparent effect on the weight of the thyroid gland. There was very little difference in histological appearance between the thyroid glands of the controls and those of the erythromycin-treated chickens. It was concluded that the growth response of chickens to erythromycin is independent of the thyroid gland.

ANON. (1957). **Experimental bloat studies.**—*J. Amer. vet. med. Ass.* **130,** 49-50. **2153**

Studies of frothy legume bloat show that antibiotics have been effective in its prevention, whereas detergents and silicones are ineffective.

One to two gal. of clover juice pumped into the rumen of 2-year-old steers produced bloat in 45 min., but the same steers did not bloat when given the same quantity of the juice after they had been fed hay instead of grazing for 3 days. Repeated attempts to relieve legume bloat with a stomach tube were never successful. It is suggested that legume bloat is caused by the predominance of abnormal ruminal micro-organisms which increase in relative numbers when the animal has been on legume forage for several days.—J. A. NICHOLSON.

BARHYDT, J. B. & DYE, J. A. (1957). **Relationship between dietary carbohydrate, abomasal carbohydrate, and blood glucose in the calf.** —*Cornell Vet.* **47,** 76-89. [Authors' conclusions modified.] **2154**

From feeding experiments in 2 calves the authors drew the following conclusions. Unfermented lactose is an important source of energy for the unweaned ruminant, because virtually all of it enters the abomasum *via* the oesophageal groove; this is true whether the calf is fed milk alone or hay and grain as well. If the animal drinks milk from a pail, most of it enters the rumen; and if the rate of fermentation is high,

as it is in a well fed calf on a good diet, the amount of lactose reaching the abomasum is relatively low. The quantity of sugar available for absorption from the small intestine decreases with the age of the animal during the first year of life.

The average daily supply of digestible hexose polysaccharide to a calf of 5 months to 1 year of age is 20 to 30 g. on a hay plus grain diet, slightly greater on a grain diet, and less on a diet of hay alone. The postprandial blood sugar curves are related to the abomasal hexose carbohydrate concentration, revealing that a rise of only 10 mg.% of blood sugar 2 to 6 hours after a meal is influenced by sugar absorption from the intestine. Xylose was the only free sugar in the abomasum in measurable quantities, 1 to 2 mg. per g. of dry matter. Experiments confirmed its fermentation in the rumen and its absorption from the small intestine. Suggestions on its possible use were made.

GOODWIN, R. F. W. (1957). **The relationship between the concentration of blood sugar and some vital body functions in the new-born pig.**—*J. Physiol.* **136,** 208-217. [Author's summary copied *verbatim.*] **2155**

The new-born pig when starved soon dies in a state of severe hypoglycaemia. With the decline of the blood glucose concentration there is a corresponding decline in general metabolism, as evidenced by the heart and respiratory rates, and the body temperature.

The starving new-born calf maintains its blood glucose concentration for a week or more, and during this time it shows no serious metabolic deterioration. Furthermore, when the blood sugar is reduced with insulin the calf behaves, except for certain neuroloical signs, as if indifferent to severe hypoglycaemia. The metabolic stability during starvation, therefore, does not derive solely from the ability to maintain the blood sugar concentration.

If the blood glucose concentration of the new-born pig is reduced with insulin, a syndrome of complete collapse develops which is indistinguishable from the state that is seen during starvation. It appears, therefore, that the metabolism of the new-born pig is governed completely by the concentration of circulating glucose. The pig becomes increasingly refractory to starvation with age, and in the older pig, as with the new-born calf, insulin hypoglycaemia has no marked effect on the general body metabolism.

BLAIZOT, J. & RAYNAUD, P. (1957). Présence d'acides aminés libres dans le rumen des bovins. **[Presence of free amino-acids in the bovine rumen.]**—*C. R. Acad. Sci., Paris* **244,** 802-803. **2156**

Small amounts of 8 amino-acids were detected by chromatography in juice from rumen contents. The amount of the commonest, glutamic acid, was assessed as 1 mg./100 g. of fresh material.—R.M.

PEIRCE, A. W. (1957). **Saline content of drinking water for livestock.**—*Vet. Rev. Annot.* **3,** 37-43. **2157**

P. discussed the maximum saline content of drinking water for horses, cattle, sheep and pigs, and the harmful results of drinking excessively saline water.

MCCLYMONT, G. L., WYNNE, K. N., BRIGGS, P. K. & FRANKLIN, M. C. (1957). **Sodium chloride supplementation of high-grain diets for fattening Merino sheep.**—*Aust. J. agric. Res.* **8,** 82-90. **2158**

The authors studied the effect of adding 0·25% NaCl to the following diets, fed *ad libitum* to young Merino wethers for 60 days: (1) 100% oat grain, (2) 50% oat grain, 50% lucerne chaff, (3) 75% oat grain, 25% lucerne chaff, (4) 50% oat grain, 50% wheat chaff, (5) 75% oat grain, 25% wheat chaff. Food consumption, efficiency of food utilization and body-weight gains were increased by supplementation. Lack of Na rather than Cl was probably the limiting factor in the unsupplemented diets. Dietary Na intake did not affect serum-Na levels except for raising those of sheep on diet (2). Serum-K levels were higher in sheep on unsupplemented diets.

—M. H. HARDY.

DONE, J. T., BROOKSBANK, N. H. & BUNTAIN, D. (1957). ***Meningoencephalitis eosinophilica* of swine. I. The naturally occurring disease.**—*Vet. Rec.* **69,** 67-70. **2159**

Two outbreaks of a nervous disorder of young pigs were observed. In one a litter of 9 newly-weaned piglets developed fits and one died. P.M. examination of a survivor was negative, but histological examination revealed eosinophilic meningoencephalitis. In the other outbreak 10 out of 44 store pigs on 2 neighbouring farms were affected with fits and 9 of them died within 3–5 days: eosinophilic meningoencephalitis was diagnosed. This outbreak coincided with the commencement of feeding on a new batch of meal, found to contain 7·2% sodium chloride. The authors concluded that the condition could be caused by excess of sodium chloride in the diet, combined with restricted water intake.—R.M.

COLLERY, L. (1957). **The behaviour of Fe55 in rats.**—*Irish vet. J.* **11,** 66-70. [Author's summary modified.] **2160**

A method is described for the study of iron metabolism in the rat using Fe^{55}. Feeding this istotope of iron as the red oxide in amounts up to 400 mg. over a period of 30 days caused neither impairment of appetite nor microscopically visible changes in the viscera. The findings suggested that although the small intestine is active in the uptake of iron, the large intestine, most probably the caecum, is active either in its storage or excretion. The problem is being further investigated.

SEEKLES, L. (1956). Sporenelementen — in het bijzonder koper — een diergeneeskundig probleem. [**Problems of trace elements, particularly copper.**]—*Tijdschr. Diergeneesk.* **81,** 910-933. [In Dutch. English, French and German summaries. Abst. from English summary.] **2161**

A correlation between liver copper and serum copper in lactating cows exists only when the level of copper in the liver and in the blood serum does not exceed 10 to 15 p.p.m. dry matter basis and 60 g. per 100 ml. respectively.

In the normal milch cow a correlation is shown to exist between the Cu value of the blood serum and the value of inorganic phosphate. Abnormally high levels of inorganic phosphate—which are also observed during shock—correlate with subnormal Cu values. This observation may be associated with a checking of the oxidative phosphorylation in cases of Cu deficiency, giving rise to a decrease in energy-rich phosphates which determine the reactivity of the cells.

As contrasted with man and horses the Cu content of the liver of cattle was reduced in all diseases hitherto examined, namely gastro-intestinal disturbances, strongylosis, Johne's disease and TB. [See also *V.B.* **20,** 2624; **23,** 2017; **26,** 3558]. Hence it is not only the complicated gastro-intestinal tract that gives rise to the occurrence of a negative Cu balance in cattle, but also stimuli of endogenous origin.

In the ruminant cobalt has a special function with regard to microbial conditions in the rumen. The rumen flora is changed in Co deficiency. Ruminants are able to synthesize Co-containing vitamin B_{12} and related substances from cobalt salts in the rumen. In this respect they differ from non-ruminants. Owing to this synthesizing capacity the vitamin B_{12} content of milk is less variable in ruminants than in non-ruminants. The interrelationships of one trace element with another and of trace elements with macro-elements (and other nutrients) are still obscure. These problems which are of very great importance in animal nutrition can only be solved by systematic balance trials.

MILLER, R. F., PRICE, N. O. & ENGEL, R. W. (1956). **Added dietary inorganic sulfate and its effect upon rats fed molybdenum.**—*J. Nutr.* **60,** 539-547. [Authors' summary modified.] **2162**

Dietary inorganic sulphate alleviated the inhibition of growth induced by molybdenum in rats. Molybdenum in the diet caused an increase in the liver and blood levels of molybdenum and copper. This increase was reduced when inorganic sulphate was added to the ration containing molybdenum. The growth inhibition caused by 75 p.p.m. of molybdenum could be overcome by the addition of 2,200 p.p.m. of inorganic sulphate. Sulphate was partially effective in diets containing as much as 300 p.p.m. of molybdenum. With 100 p.p.m. of molybdenum in the diet it appeared that between 800 and 2,200 p.p.m. of sulphate had the maximum protective effect.

TACKEN, P. H. W. (1956). Aspecten van het regulerend systeem en de verhouding bodem, plant, dier in verband met enkele stofwisselingsziekten. [**Relationships between soil, plants and animals in connexion with metabolic disorders.**]—*Tijdschr. Diergeneesk.* **81,** 857-909. [In Dutch. English, French and German summaries. English summary modified.] **2163**

Various aspects of the regulatory system and the soil-plant-animal relationship and their bearing on metabolic disorders are discussed. The investigation indicated that the Mg content of grass in spring-time was lower than in summer and autumn. In the cow and pig the Mg content of the blood appeared to be lowest in spring.

Apart from the fact that high K/Na, K/Ca and K/Mg ratios in the herbage are unfavourable factors, which increase the danger of grass tetany in cattle, the author concludes that it is desirable to stimulate the regulatory processes of production animals. In this respect it appears desirable to give milk-producing cattle—especially where much silage is fed during the winter—additional minerals in the form of calcium carbonate and sodium chloride and iodine. The detoxication processes can be enhanced by feeding concentrates containing Mg. In addition, it might prove worth while considering experiments with potassium chlorate added to minerals for cattle and possibly also to those for pigs.

MALHERBE, W. D. (1956). **Some observations on rickets and allied bone diseases in South African domestic animals.**—*Ann. N.Y. Acad. Sci.* **64,** 398-409. **2164**

For the treatment of rickets in farm animals in South Africa, adjustment of the absolute and relative amounts of calcium and phosphorus in the diet was essential, while the administration of vitamin D was not necessary as sunlight was abundant. Rickets in well-fed puppies was found to be caused by the excessive administration of unsuitable cod-liver oil. There are details and radiographs of 3 cases.—R.M.

RAOUL, Y., MARNAY, C., LE BOULCH, N. & PRELOT, M. (1957). Isolement d'une antivitamine D des parties aériennes des végétaux. **[Isolation of an antivitamin D from the aerial parts of plants.]**—*C. R. Acad. Sci. Paris* **144,** 954-957. **2165**

The authors prepared an extract from the leaves and stems of certain pasture and forage plants, which had a rachitogenic action when administered by mouth to chicks.—R.M.

MILLER, E. R., SCHMIDT, D. A., HOEFER, J. A., LUECKE, R. W. & COLLINGS, W. D. (1957). **Electrocardiographic patterns of normal and thiamine-deficient baby pigs.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 209-211. [Authors' summary modified.] **2166**

Electrocardiograms were recorded weekly from birth for 5 weeks in 35 piglets receiving various subminimal and adequate levels of thiamine in the diet. Typical patterns of normal and thiamine-deficient piglets are described. Significant increases in PR time, QT time and cycle length occurred in deficient piglets. These animals consistently exhibited sinus arrhythmia. First and second degree auriculoventricular block were observed, and there was evidence of cardiac hypertrophy.

BRONSCH, K. (1956). Die Stoffwechselregulierung durch hormonale Reaktionen und deren Bedeutung für die Pathogenese bei Haustieren. **[Regulation of metabolism by hormonal reactions and their significance in pathogenesis in domestic animals.]**—*Zbl. VetMed.* **3,** 515-569. [English, French and Spanish summaries.] **2167**

B. reviewed the literature and described methods for measuring adrenal and thyroid activity, giving details of normal values in pigs at various ages. He stated that hormonal regulation may be determined from the intensity and type of reaction to induced fever. There is a distinct difference between reaction to stress in healthy and sick animals. A fully adequate diet is as a rule sufficient to keep hormonal activity at its optimum. A minor dietary deficiency may by its effect on endocrine performance affect the adaptability of the animal organism to environmental stimuli. B. concluded that what is termed "constitution" in domestic animals depends largely on the ability of the endocrine system to respond to environmental stimuli. There are 150 references.—E.G.

ZARROW, M. X., HORGER, L. M. & MCCARTHY, J. L. (1957). **Atrophy of adrenal gland following thiouracil and vit. B_{12}.**—*Proc. Soc. exp. Biol., N. Y.* **94,** 348-349. [Authors' conclusions modified.] **2168**

Vitamin B_{12} prevented the inhibitory action of thiouracil on growth in rats, but did not prevent adrenal atrophy. Atrophy of the adrenal cortex was due to a specific action of thiouracil.

BUTLER, G. W. & JOHNSON, J. M. (1957). **Factors influencing the iodine content of pasture herbage.**—*Nature, Lond.* **179,** 216-217. **2169**

The iodine content of various pasture grasses in New Zealand was found to be independent both of soil type and of season. Each strain has a percentage iodine content which is a strongly inherited characteristic, varying, for example, from 146 μg. iodine/100 g. dry wt. in perennial ryegrass down to 7 μg. iodine/100 g. dry wt. in Yorkshire fog. Congenital goitre in lambs has been associated with iodine contents less than 30 μg./100 g. dry wt.—E.V.L.

SJÖSTRÖM, G. (1957). Jodhalten i svensk mjölk. **[Iodine content of milk in Sweden.]**—*Nord. VetMed.* **9,** 81-90. [In Swedish, English and German summaries. English summary modified.] **2170**

The iodine content of milk from various districts in Sweden was determined. In the Stockholm area the average concentration was 27 μg./litre. In the Göteborg and Bohus counties the corresponding value was 40·4, in the northern part of Småland 9·3, and in the Kopparberg county excluding the Siljan Lake district 10·6 μg./litre. In the Siljan Lake district the iodine content was 26 μg./litre. Possible explanations of these variations are discussed, with special reference to the clay content of the soil and the influence of the sea. The results of this study seem to support the iodine deficiency theory on the occurrence of endemic goitre.

CONRAD, H. R., HANSARD, S. L. & HIBBS, J. W. (1956). **Studies on milk fever in dairy cows. V. The effect of massive oral doses of vita-**

min D on absorption, excretion, retention and blood levels of calcium and phosphorus.—*J. Dairy Sci.* **39,** 1697-1705. [Authors' summary and conclusions modified.] **2171**

Tracer doses of Ca^{45} and P^{32} were used as markers in balance trials and blood studies with mature lactating and non-lactating cattle. Massive oral doses of vitamin D increased the absorption of Ca and P from the digestive tract. There was a decrease in endogenous losses accompanied by an increase in net retention, which extended throughout a 5-day period following vitamin D feeding. These changes in the absorption pattern were accompanied by a delayed increase in the blood levels of Ca and P. A rise of P preceded the rise of Ca in the blood. The increase in absorption of Ca by non-lactating cattle was accompanied by an increase in Ca^{32} concentration in the blood. Ca^{32} disappeared from the blood of lactating cows faster than from non-lactating cows. Vitamin D had no effect on the specific activity of Ca in the milk.

Ho, P. & Reber, E. F. (1957). **The effect of oxalacetic acid and pyruvic acid on hypoglycemia and ketonemia in pregnant ewes.**—*Cornell Vet.* **47,** 131-136. [Authors' summary slightly modified.] **2172**

Oxalacetic acid and pyruvic acid (57 mg. per kg. body wt.) were administered i/v to pregnant ewes with ketosis induced by starvation. Both appeared to be effective in raising the level of blood glucose. However, the effect of pyruvic acid on the level of blood ketone bodies was not consistent. Oxalacetic acid was much more effective than pyruvic acid in the treatment of hypoglycaemia and ketonaemia. It is possible that a portion of the pyruvic acid was converted into acetate, which in turn raised the level of blood ketone bodies.

Blood, D. C. (1956). **Field aspects of acetonaemia of dairy cows.**—*Aust. vet. J.* **32,** 31-41. **2173**

B. discussed the incidence, symptoms and treatment of acetonaemia in cows in a low rainfall, poor dairying area where hand-feeding is carried out extensively: 135 cases were studied within 4 years. The disease was seen in all age groups but was most common in cows in their 3rd, 4th, and 6th lactation. About 80% of cases occurred within a month after calving. Clinically the three types described by Udall [*V.B.* **25,** p. 268] were seen but the types merged into one another. Loss of appetite and production were the first signs. In only 16% of cases was there a possibility of the disease being secondary to other conditions, *e.g.* retained placenta and metritis. All cases gave a strongly positive reaction to the urine test described by Boddie [*V.B.* **21,** 905] which the author considers the most important diagnostic aid. A most successful treatment was a single i/v injection of glucose, plus drenching with 1 pint of glycerol twice a day for 2 days. However, either treatment alone was satisfactory. A.C.T.H. was a relatively poor treatment. B. suggests that A.C.T.H. may be better used when the disease appears to be of endocrine origin in herds which have access to good feed.—L. C. Lloyd.

Talsma, D. (1956). Het acetonemieprobleem bij het rund. **[Acetonaemia in the cow.]**—*Tijdschr. Diergeneesk.* **81,** 934-945. [In Dutch. English, French and German summaries. Abst. from English summary.] **2174**

T. considers the injection of large doses of cortical steroids to be a stimulative form of therapy which may well prove dangerous in cases characterized by marked exhaustion. Instead of being assisted to overcome an existing steroid-deficiency, the animal is thus subjected to an ever greater stress. Acetonaemia is not due to a deficiency of any single substance, but to a large number of factors combining to cause the characteristic clinical picture. T.'s practical experience has led to the conclusion that the accent lies more on functional lesions in the rumen, reticulum and omasum and disorders related to intermediate metabolism, than on hormone or mineral deficiencies.

If a drastic stimulant is used as a remedy, it is advisable to administer glucose intravenously or glucose precursors by month. Examination of the urine is essential after treatment. In many cases excretion of ketones still continues. Milk production rises and, although there is a marked improvement in appetite in many cases, the animal continues to lose weight rapidly. The glucose content of the blood in these instances will be found to vary between 35 and 40 mg.%. In T.'s opinion, these cases are marked by the continuance of a disorder in the initial digestion process. The animal endeavours to counteract this by excessive glucogenesis from its reserves. A complete cure cannot be expected, however, until a high percentage of the reserve fat has been converted into calories, or the animal is put out to pasture with the consequent complete modification of its nutritional intake and daily routine.

See also abst. 2283 (book, comparative physiology of nutrition, mineral and water metabolism).

DISEASES, GENERAL

HARTLEY, W. J. (1956). **Observations on mortality of young dogs in New Zealand.**—*N. Z. vet. J.* **4**, 147-154. [Authors' summary modified.] **2175**

This paper describes the results of pathological, bacteriological, and toxicological examination of 50 young dogs to find the cause of death. The results indicate that 31 of the dogs had distemper, 27 lead intoxication, 6 toxoplasmosis, and 3 virus hepatitis. About half of the dogs were affected with two or more potentially lethal disease entities. The possible inter-relationship of the combined diseases is discussed.

MORO SOMO, M. (1955). Dos enfermedades infecto-contagiosas que atacan a las crías de alpacas. (Trabajo preliminar). **[Two infectious diseases of young alpacas: bacillary diarrhoea and stomatitis.]**—*Vet. y Zootec., Lima* **7**, Nos. 17-18. pp. 30-35. [English summary pp. 62-63.] **2176**

The two diseases dealt with are diarrhoea and stomatitis. The former, caused by *Cl. welchii*, affects young animals between 3 and 80 days, mainly 21–40 days. The period of incubation in artificial infection is 18–48 hours by the subcutaneous route and 2–6 days by the oral route. The course of the disease may be very short, death supervening before the onset of symptoms. It may be longer with symptoms of abdominal distension, pain, inappetence and prostration with or without diarrhoea. Diarrhoeic faeces are foetid and discoloured. Condition is maintained except in protracted cases. P.M. findings include froth in the trachea, congestion of the lungs, enlargement of and haemorrhages in the mesenteric lymph nodes, congestion of the mucosa of the abomasum and large intestine. Tetracycline ("Acromycin") and terramycin gave good results in treatment. The causal agent of stomatitis is considered to be a *Streptococcus*, though other organisms may also be responsible. The disease commonly affects animals aged 2–4 months. The period of incubation is 13–18 hours. In experimental infection a red, very painful papule forms at the site of inoculation; this grows larger and yellowish and the tongue becomes swollen and hot. Pustules form and, on bursting, discharge a yellow purulent exudate. This is followed by ulceration.—T.E.G.R.

ALEXANDER, A. D. & KOOSTRA, A. G. (1954). Nuevo tratamiento para la diarrea de los bovinos. **[Treatment of diarrhoea in cattle with di-phenthane 70.]**—*Rev. Med. vet., B. Aires* **36**, 135. **2177**

Di-phenthane 70 [dichlorophen] as a 15% suspension was used in the treatment of diarrhoea, in 208 cattle, due to coccidiosis and other causes. The dose was 125 ml. repeated after 24 hours. Treatment was successful except in cases where diarrhoea was due to nematode infestation.—T.E.G.R.

PARNAIK, D. T. (1957). **Bovine lymphangitis-lymphadenitis.**—*Indian vet. J.* **34**, 42-49. **2178**

This disease of cattle characterized by the development of large abscesses in the superficial lymph nodes, particularly the prescapular and popliteal, accompanied with lameness and deformity of the hooves, wasting, and frequently terminating in death, has been known in India and Ceylon for many years. It has been investigated intermittently by a number of workers, and a variety of organisms have been incriminated from time to time. This article describes the condition as it has been observed in the North Canara and Dharwar district of Bombay State.

[Many features of this disease closely resemble the chronic stages of "lumpy skin disease" as described in S. Africa. The abstractor observed an outbreak of disease in a herd of cattle in Ceylon in 1943 which closely resembled "lumpy skin disease". This outbreak spread rapidly through the herd and in the early stages was characterized by the development of numerous skin nodules on many parts of the body. All ages and both sexes were affected. The majority of the cases recovered spontaneously in a few weeks' time, but some, especially some of the stud bulls and older cows, became chronic. These chronic cases developed large abscesses in the prescapular and popliteal lymph nodes with lameness, deformity of the hooves, loss of condition and ultimate decubitus. On P.M. examination abscesses in the lungs and ulcers in the trachea were found. In other words these chronic cases closely resembled the so-called bovine lymphadenitis. It might be of value to investigate the possibility that a virus may be concerned in the causation of the disease in India.]

MARTINI, I. (1956). Cose vecchie sempre nuove: il "Pabi". **[Stomatitis in cattle caused by *Setaria viridis* grass.]**—*Vet. ital.* **7**, 1131-1134. **2179**

The awns of *Setaria viridis* may cause stomatitis in cattle, with lesions resembling those of foot and mouth disease, with the difference,

however, that the lesions are restricted to the mouth and there is no febrile reaction.

—T.E.G.R.

MARSH, H. & SAFFORD, J. W. (1957). **Effect of deferred castration on urethral development in calves.**—*J. Amer. vet. med. Ass.* **130,** 342-344. [Authors' conclusion copied *verbatim*.] **2180**

Measurements of the diameter of the lumen of the urethra in steer calves, 10 months old, castrated at the age of 1 month, calves castrated at 7 months, and bulls of the same age show differences which may be a factor in the observed lower incidence of clinical urolithiasis in bulls and late-castrated steers as compared with steers castrated when very young.

BLOOD, D. C. (1956). **Arthrogryposis and hydranencephaly in newborn calves. Incidence and clinical findings.**—*Aust. vet. J.* **32,** 125-131. **2181**

Cases observed in the University Farm practice of arthrogryposis ("curly calf") and of hydranencephaly in new-born calves are recorded and discussed. Arthrogryposis is characterized by a restriction of movement of limb and sometimes neck joints, and hydranencephaly by varying degrees of brain abnormality ("imbecility"). Cases are seen sporadically in most years, but in 1951 and 1955 the high incidence attracted special attention. The two conditions are considered to be different manifestations of the same disease. Its most likely time of onset is during early pregnancy. B. discusses possible causes of the disease, which include an infectious agent, mineral deficiency, and plant poisoning with special reference to *Jussieua repens* and paspalum ergot.—L. C. LLOYD.

I. BOSANQUET, F. D., DANIEL, P. M. & PARRY, H. B. (1956). **Myopathy in sheep.**—*Lancet* **271,** 1355-1356. **2182**

II. PARRY, H. B. (1957). **Scrapie and related myopathies in sheep. Preliminary observations on their investigation and attempted control by a voluntary health scheme.**—*Vet. Rec.* **69,** 43-55. **2183**

III. PATTISON, I. H. (1957). **Myopathy in sheep.**—*Lancet* **272,** 104-105. **2184**

I. This is an answer to points raised by correspondents concerning the orginal article by Bosanquet *et al.* [*V.B.* **27,** 1856] who consider that the myopathy they described is *not* the same as (i) the dietetic muscular dystrophy of calves and lambs associated with vitamin E deficiency; (ii) the muscular dystrophy of adolescent sheep associated with severe exertion described by Marr, Sharman & Blaxter [*V.B.* **26,** 3554]; (iii) the nutritional muscular dystrophy of adult sheep described by Marston & Peirce (1942).

II. Parry classified 448 cases of myopathy in sheep from 25 flocks in widely scattered parts of Britain, describing 10 different syndromes. Four of these, in which rubbing was a prominent feature, he claimed to be forms of scrapie, viz. an asthenic ataxic type (classical scrapie); an asthenic non-cachectic obese type (non-wasting scrapie); an asthenic cachetic type (pining scrapie); amaurotic scrapie, characterized by rapidly progressive loss of vision. The non-rubbing forms are classified as follows:— Inapparent myopathy (?preclinical scrapie); acute hind limb myopathic palsy; post-partum myopathic pining; acute myopathic asthenic paralysis; juvenile myopathic pining; generalized myopathic ataxic pining. Parry considers the available evidence incompatible with the theory that scrapie is caused by an infectious communicable agent with a long incubation period affecting the c.n.s., and propounds the hypothesis that all the myopathies described, including scrapie, are forms of a disease which is primarily hereditary but subject to modification by environmental factors. The control measures suggested consist essentially of the enlistment of the best pedigree stocks in a voluntary scheme allowing co-ordination of efforts to eliminate scrapie strains on a breed, rather than a flock, basis.

III. Pattison states that despite the criticism of Bosanquet *et al.* in I above, he sees no reason to alter the opinion expressed by Holman and himself [*V.B.* **13,** 2436] that "clinical symptoms suggestive of scrapie followed by microscopic discovery of vacuolated nerve-cells in the medulla oblongata probably constitute sufficient evidence on which to base a positive diagnosis of the disease". Statistical evidence from observations on sheep and goats is presented in support of this statement. An experiment is quoted in support of the transmissibility of scrapie. All of 12 goats inoculated intracerebrally with brain material from an affected sheep and, to date, 8 out of 10 goats sub-inoculated from one of the 12, developed clinical scrapie, whereas of over 650 other goats which had passed through the flock since 1949 none had ever shown the slightest evidence of scrapie, myopathy or other muscular or nervous disability.—H. SCOTT MCTAGGART.

SHARMA, R. M. & BHATIA, H. M. (1956). **Lumbar paralysis in sheep and goats.**—*Indian J. vet. Sci.* **26,** 117-122. [Authors' summary modified.] **2185**

An obscure disease occurring amongst sheep

and goats at the Government Livestock Farm, Hissar, is described. Encouraging results were obtained by administration of thiamine to clinical cases. The effect of administration of trace elements copper, cobalt and iron, on the incidence of the disease was studied; it appears that a deficiency of trace elements plays some role in causation. It had neither been possible to isolate any pathogenic organism from affected cases, nor to reproduce the disease in sheep, goats and laboratory animals.

ANON. (1957). **[Use of sulphonamides for the treatment of bronchopneumonia in reindeer.]** —*Veterinariya, Moscow* **34,** No. 1. p. 96. [In Russian.] **2186**

The Ministry of Agriculture of the U.S.S.R. recommended a single s/c inj. of a 20% suspension in oil of "sulphodimezine" at a dosage of 1–1·2 ml./kg. body wt. Other sulphonamides ("norsulphazol", "sulphazin", "disulphan") were rather less effective and were given as 25% suspensions. Alternatively, sulphonamides could be given by mouth as a single dose of 0·05 g./kg. body wt. A second dose was given by either route after 5–7 days, if required.—R.M.

SCHULZE, W. & HAUKE, H. (1956). Zur Anwendung eines Rutinpräparates bei der Behandlung von Nierenerkrankungen des Hundes. **[Use of a rutin preparation in diseases of the kidneys in dogs.]** — *Mh. VetMed.* **11,** 588-590. **2187**

Dogs with acute or chronic nephritis, uraemia and haematuria were given parenteral doses of 5 mg. of rutin/kg. body wt., or, when given *per os,* in doses of 100–300 mg., according to size. Of 8 dogs with acute nephritis 7 were cured within 1–2 weeks, of 22 with chronic nephritis 14 were cured in 2–4 weeks, in 4 there was marked improvement, the remainder did not respond. Of 6 with uraemia 2 were cured. Four with haematuria were cured by combined intravenous and oral treatment.—E.G.

MIGLIANO, M. F. (1955). O hemograma do cão em diferentes condições patológicas. **[The canine blood picture in some pathological conditions.]**—*Rev. Fac. Med. vet., S. Paulo* **5,** 427-529. [English conclusions.] **2188**

This is a comparative systematic study of the blood picture of the dog in health and in various pathological conditions. The diseases are grouped under 2 main headings. The first group includes diseases of the haematopoietic organs: leucaemia and diseases of the lymphatic system; anaemic conditions, and haemorrhagic conditions. The second group includes: infectious diseases; parasitic conditions; organic diseases; and neoplasms. The main blood changes in a number of diseases under study are condensed in tabular form as are normal values obtained by the author and by other workers over a number of years. There are also 24 tables giving blood pictures in the different groups of conditions studied by the author and by other workers. There are over 300 references.—T.E.G.R.

FREDRICKSON, T. N., CHUTE, H. L. & O'MEARA, D. C. (1956). **Investigations on the hematology of broiler flocks.**—*Proc. 28th Ann. Meet. N. E. Conf. Lab. Wkrs Pullorum Dis. Contr.* Newark, Delaware, June 19 & 20, 1956. 7 pp. **2189**

Work on avian haematology was begun at Maine University, with a view to adapting and developing quick, accurate and simple methods of blood examination. Up to the time of reporting blood samples from 243 birds were subjected to the usual tests—red and white blood cell counts, differential counts, haematocrit tests, sedimentation rates etc. The methods applied to 92 samples, taken from chicks aged 1–10 weeks, are briefly described, where necessary, and the resulting observations are recorded. The hope is expressed that it may be possible to establish the normal range of values of the blood components for purposes of comparison with abnormal values ensuing from pathological conditions and thus facilitate diagnosis and prognosis.—T.E.G.R.

BOURSNELL, J. C. & GLEESON-WHITE, M. H. (1957). **Temporary preservation of carcasses of small laboratory animals containing radioactive isotopes.**—*Nature, Lond.* **179,** 54. **2190**

The authors describe a method for the preservation of whole carcasses or portions not greater than 3 kg. in weight by sealing them in polythene bags together with a mixture of fresh bleaching powder and "Vermiculite" (a commercial expanded mica). This procedure enables carcasses containing short-lived isotopes to be preserved until the radioactivity is relatively innocuous, before incineration, thus avoiding the task of collecting and disposing of radioactive ash.—E.V.L.

STEHBENS, W. E. (1957). **Medial defects of the cerebral arteries of some mammals.**—*Nature, Lond.* **179,** 327-328. **2191**

An examination of 115 major bifurcations and forks in the cerebral arteries of 6 adult dogs demonstrated a medial defect in 85 of the forks; the defects tended to occur at bifurcations forming an acute angle. Of 30 forks in the brain of an old horse, all showed medial defects

except one. Similar defects have been seen frequently in sheep. These findings seem to indicate that medial defects in the cerebral arteries are not the sole aetiological factor in the pathogenesis of intercranial aneurysms which occur so commonly in man and rarely in domestic animals.—E.V.L.

BENACERRAF, B., BIOZZI, G., HALPERN, B. N., STIFFEL, C. & MOUTON, D. (1957). **Phagocytosis of heat-denatured human serum albumin labelled with ^{131}I and its use as a means of investigating liver blood flow.**—*Brit. J. exp. Path.* **38,** 35-48. [Abst. from Survey of paper. (p. i.).] **2192**

The blood clearance of heat-denatured serum albumin labelled with ^{131}I was measured in mice, rats, g. pigs and rabbits. At high dose levels the phagocytic activity of the reticulo-endothelial system could be measured, and at low dosage levels the blood clearance could be used to estimate liver blood flow.

GRAVESON, G. S. (1957). **Acute polyneuritis treated with cortisone.**—*Lancet* **272,** 340-343. **2193**

Although dealing with a syndrome seen in man this article may be of interest to those studying scrapie and other nervous and muscular diseases of animals.

In the human syndrome the only lesions observable in the early stages is oedema of the nerve roots followed later by disintegration of myelin sheaths and axis-cylinders. The disease is thought to be allergic in origin and cortisone has proved to be of great value in treatment if administered in the early stages.

POISONS AND POISONING

FABRE, R. & GIRAULT, M. (1957). Contribution à l'étude de l'action des toxiques sur l'embryon de poulet. Application au cas du plomb. **[Action of toxic agents on the chick embryo: lead poisoning.]**—*C. R. Acad. Sci., Paris* **244,** 535-538. **2194**

Lead acetate, containing the equivalent of 1 mg. Pb, was injected into chick embryos at the 5th day of incubation. Examination 12 days later revealed retardation of growth and general atrophy of the encephalon. About half of the embryos inoculated were killed by 1 mg. Pb.—R.M.

OLIVER, W. T. & ROE, C. K. (1957). **Arsanilic acid poisoning in swine.**—*J. Amer. vet. med. Ass.* **130,** 177-178. [Authors' summary copied *verbatim.*] **2195**

Pigs showed signs of poisoning after being fed approximately 15 times the recommended level of arsanilic acid for a week. The symptoms, lesions and chemical analyses are discussed.

MARSBOOM, R. & BRODSKY, M. (1957). Un cas d'intoxication aiguë du bétail par le xylène. **[Acute xylene poisoning in cattle while passing through a dipping tank.]**—*Bull. agric. Congo belge* **48,** 101-104. [In French. Flemish summary.] **2196**

Twenty bullocks were passed through a dipping tank half an hour after the tank had been charged with a solution of benzene hexachloride dissolved in xylene. The solution consisted of 11·8% gamma isomer of B.H.C.; 14·4% other isomers, 59% xylene and 14·8% inert substances. This was diluted to make a final dilution of 1 in 1000. The day was calm [and probably hot]. Eight hours after dipping one of the cattle was dead and the others had alarming nervous symptoms.

The cause of the trouble was thought to be inhalation of xylene vapour while passing through the dipping tank. Experimentally similar symptoms and death was produced in a rabbit exposed for 10 sec. to a concentration of xylene similar to that calculated to have been present in the air on the surface of the dipping tank.

It is recommended that when solutions containing xylene are used for dipping cattle a period of 24–48 hours should be allowed to elapse after charging the dipping tank before cattle are passed through it.

SEATON, V. A. (1957). **Pulmonary adenomatosis in cattle produced by nitrogen dioxide poisoning.**—*N. Amer. Vet.* **38,** 109-111. [Author's summary copied *verbatim.*] **2197**

Pulmonary adenomatosis in cattle appears to be increasing in rural areas of Iowa where "silo-filler's disease" occurs in man. These are the areas where both man and animals may encounter the toxic substance, nitrogen dioxide. A cow, experimentally exposed to nitrogen dioxide, had the typical symptoms of the disease.

SIMMONET, H., LE BARS, H. & MOLLÉ, J. (1957). Le cycle de l'ureé administreé par voie buccale chez les ruminants. **[Fate of urea administered by mouth to sheep.]**—*C. R. Acad. Sci., Paris* **244,** 943-945. **2198**

After absorption from the stomach, some of

the urea ingested was re-excreted into the digestive tract by way of saliva. This might explain the inhibition of rumen motility by urea. [See also *V.B.* **27,** 1835 & 1883.]—R.M.

I. Beer, J. (1956). Schwere Gesundheitsschädigung bei Schweinen durch Fussbodenbelag aus Braunkohlenteerhartpech. **[Severe effect of tarred floor slabs on the health of pigs.]** —*Arch. exp. VetMed.* **10,** 321-334. **2199**

II. Thamm, H. (1956). Versuche über die Einwirkungen teerhaltiger Stallbodenplatten auf die Gesundheit der Schweine. **[Effects of floor slabs containing tar on the health of pigs.]**—*Ibid.* 632-648. **2200**

I. The toxicity of floor slabs containing lignite tar pitch was confirmed by experiments with pigs. [See also *V.B.* **27,** 898 & 899.]

II. Floor slabs containing as little as $\frac{1}{3}$ lignite tar pitch caused a 20–28% reduction in the growth rate of pigs kept in sties floored with the slabs; pigs developed liver dystrophy and nephritis. On the other hand, asphalt obtained from mineral oil bitumen by extraction was not toxic, although asphalt obtained by distillation of mineral oil was. T. emphasized the necessity of biological tests of new building materials of this type, before their introduction for animal buildings.—R.M.

v. Sandersleben, J. (1956). Frostschutzmittelvergiftung bei Hund und Huhn. **[Poisoning in dogs and fowls by an "anti-freeze" mixture.]**—*Mh. VetMed.* **11,** Suppl. No. 2. pp. 683-685. **2201**

The P.M. findings in two dogs which died after spontaneous poisoning with "an anti-freeze mixture" were compared with those of two dogs and two fowls which had received ethyleneglycol *per os.* In all cases the findings were identical. The most severe lesions were found in the kidneys and they consisted of degenerative and necrotic changes accompanied by calcification.—W. G. Siller.

Kleinfeld, M. & Gross, M. (1956). **Electrocardiographic manifestations of hypocalcemia produced with ethylenediamine tetraacetic acid.** — *Amer. J. Physiol.* **187,** 479-482. [Authors' abst. modified.] **2202**

Electrocardiographic changes associated with the hypocalcaemic state induced in rabbits by rapid i/v inj. of the disodium salt of ethylenediamine tetraacetic acid were studied. The rate of inj. varied between 50 and 120 sec.; more electrocardiographic abnormalities were produced when the inj. was made in less than 50 sec. The most frequent finding was a prolonged Q-T interval caused predominantly by a lengthening of the ST segment. Abnormal T waves were observed in a significant number of animals. Electrical alternation of the T wave, not reported in association with clinical hypocalcaemia, was also found.

Löliger, H. -C. (1956). Beitrag zur Histologie der Vergiftung mit aldrin- und dieldrinhaltigen Getreidebeizen bei Hühnern. **[Histological study of lesions in fowls following poisoning with seed dressing containing aldrin and dieldrin.]**—*Mh. VetMed.* **11,** Suppl. No. 2. pp. 685-688. **2203**

Fowls poisoned with seed dressings containing aldrin or dieldrin show no pathognomonic P.M. lesions, but a generalized vascular dilatation leading to passive venous and capillary hyperaemia may be observed. This brings about oedema of the liver, kidneys and brain. The spleen is usually ischaemic and the splenic arteries are contracted. Inflammatory changes are confined to the small intestine. Nephrosis is usually prominent and fatty change is not a constant finding in the liver.—W. G. Siller.

Gylstorff-Sassenhoff, I. (1956). Vergiftungen beim Geflügel. **[Poisoning in poultry.]** —*Mh. VetMed.* **11,** Suppl. No. 2. pp. 678-683. **2204**

The author describes a general decline in the incidence of poisoning in poultry since 1948. The prevalent type of poison was found to be dependent on the popular rodenticide in use at a given time. Sulphonamides have recently become an important source of poisoning in poultry. The acute and chronic symptoms of poisoning are described and it is stressed that, particularly in acute cases, the P.M. findings are similar no matter what poison has caused death.—W. G. Siller.

Selye, H. & Bois, P. (1957). **Effect of STH on experimental lathyrism.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 133-137. [Authors' summary modified.] **2205**

Experiments in rats indicate that somatotrophic (anterior pituitary growth) hormone can greatly aggravate the skeletal manifestations of experimental lathyrism produced with aminoacetonitrile. This is so even when the hormone fails to stimulate growth.

Clemmons, J. J. & Angevine, D. A. (1957). **The occurrence of multiple fractures in suckling rats injected with B-aminopropionitrile (lathyrus factor).**—*Amer. J. Path.* **33,** 175-187. [Authors' summary modified.] **2206**

Multiple fractures were produced by injecting B-aminopropionitrile (lathyrus factor)

into unweaned rats. The fractures were preceded by pronounced degeneration of the oesteoblasts. Quantitative historadiographic studies indicated that there is a dissolution of the organic matrix associated with osteoporosis and the degenerative changes seen in the osteoblasts. There was no interference with the ability to form callus, although the matrix of the callus was abnormal. The lesions were very similar to those in osteogenesis imperfecta.

BARNETT, B. D., BIRD, H. R., LALICH, J. J. & STRONG, F. M. (1957). **Toxicity of beta-aminopropionitrile for turkey poults.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 67-70. [Authors' summary modified.] **2207**

Beta-aminopropionitrile hydrochloride was toxic to turkey poults at a level as low as 0·01% of the diet. Paralysis, degeneration of the anterior motor neurones and depression of growth were the chief abnormalities observed at 0·25% and 0·125%, while pericardial and pulmonary haemorrhage, ruptured aorta, leg and toe deformities, and depression of growth were the primary symptoms at lower levels. Preliminary attempts to alter severity of symptoms by reducing the methionine level or by adding vitamin B_{12} or a high level of all the B vitamins were not successful, but further investigation of the B vitamins appears to be justified.

I. THOMAS, A. J., EVANS, I. A. & EVANS, W. C. (1957). **Bracken poisoning of cattle—nature of the poison.**—*Biochem. J.* **65,** No. 1. p. 5P of Proceedings. **2208**

II. EVANS, W. C., EVANS, I. A., EDWARDS, C. M. & THOMAS, A. J. (1957). **Bracken poisoning of cattle—therapeutic treatment.**—*Ibid.* p. 6P of Proceedings. **2209**

I. The agent in bracken responsible for suppression of bone marrow activity in cattle was not soluble in acetone or ether. Aqueous extracts failed to produce definite evidence of toxicity in cattle, although positive results were obtained in earlier experiments with sheep [see *V.B.* **26,** 1399]. It was suggested that the toxic agent had only partly been extracted.

II. Three experimental cases, and an unstated number of field cases, of bracken poisoning were successfully treated with DL-batyl alcohol. It was given by 4 or 5 daily intravenous injections of 25–50 ml. of a soln. of 2 g. batyl alcohol with 5 g. "Tween 80" or "Tween 20" in 100 ml. 1% saline. Alternatively, daily doses each of 1 g. batyl alcohol in 10 ml. olive oil could be given subcutaneously.
—R.M.

NAHON, M. (1955). Quelques intoxications végétales au Maroc. **[Poisoning of animals by plants in Morocco.]** — *Thesis Paris, (Alfort)* pp. 53. **2210**

Plant poisoning in animals is a common occurrence in Morocco. The plants concerned are distributed throughout the botanical classification. N. gave an account of 7 of these—*Andropogon sorghum, Ricinus communis, Lupinus luteus, Urginea scilla, Ferula communis, Astragalus lusitanicus* and *Atractylis gummifera*. He described the plants, and dealt with their distribution, toxicology, the animals that are susceptible, symptomatology, lesions, and treatment. The most important plant is *A. gummifera,* of which the poisonous principle is stated to be potassium atractylate. N. extracted this substance from the plant, but was unable to demonstrate its toxicity in rats and rabbits. However, two unidentified residues of the extraction process proved to be highly toxic for these animals.—M.G.G.

See also abst. **2212** (toxicity of phenothiazine).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease.)

MARTINI, I. (1956). Nuovi dati sulle applicazione della reserpina (Serpasil) in medicina veterinaria. **[Reserpine in veterinary medicine.]**—*Vet. ital.* **7,** 1144-1146. **2211**

A review of some veterinary indications for reserpine treatment. Apparently no original work, and presumably mostly culled from the paper by Earl [*V.B.* **27,** 579].
—G. P. MARSHALL.

MALONE, P. H. (1956). **Phenothiazine toxicity.** —*N. Z. vet. J.* **4,** 125-126. **2212**

Among 30 lambs in relatively poor condition, 19 were dosed with phenothiazine of fine particle size. A batch of median particle size 2·7 μ was given to 9 of these in a dose of either 75 or 120 g. each, and another batch of a median particle size estimated at 0·4 μ (sub-colloidal) to 10 animals in a dose of 15, 75 or 120 g. each, 11 animals being kept as untreated controls. No evidence of toxicity was found during the ensuing 5 days, nor did any losses occur during the next 3 weeks.—G. P. MARSHALL.

ENGLISH, P. B. (1956). **Antibiotics: their application in veterinary practice.**—*N. Z. vet. J.* **4,** 97-114. **2213**

A comprehensive review of the pharmacological properties and actions of the penicillins, streptomycin, chloramphenicol, the tetracyclines, bacitracin, neomycin, carbomycin and the polymyxins, including brief details of E's original work on blood levels achieved with a parenteral triple penicillin preparation in horses, followed by an appraisal of the indications for the principal antibiotics in cattle, horses, sheep, pigs, dogs, cats and birds, with a summary table suggesting their relative merits in various conditions, and including sulphadimidine for comparison.—G. P. MARSHALL.

SHEWELL, J. & LONG, D. A. (1956). **A species difference with regard to the effect of cortisone acetate on body weight, γ-globulin and circulating antitoxin levels.**—*J. Hyg., Camb.* **54,** 452-460. [Authors' conclusions slightly modified.] **2214**

On the basis of these experimental findings, a distinction is made between two groups of animal species: on the one hand, those termed cortisone-sensitive, that are unable to maintain their body weight under prolonged heavy cortisone administration, whose γ-globulin synthesis is depressed and whose capacity to form antitoxin is markedly suppressed, and on the other, the cortisone-resistant,that do not lose weight under heavy cortisone dosage, and whose γ-globulin synthesis and antibody-forming capacity are unimpaired by cortisone. Rats, mice, rabbits and ferrets are cortisone-sensitive, while the only experimental animals so far found to resemble man in his resistance to cortisone are the Rhesus monkey and the g. pig. The confusion in the literature regarding the effect of the hormones of the adrenal cortex on circulating antibody, and the discrepancies observed between laboratory and clinical evidence, would both be resolved if this broad species difference were appreciated.

GUILLON, G. (1955). De l'emploi de la chlorpromazine chez les bovidés. Anesthésie sous potentialisation et indications cliniques diverses. **[Use of chlorpromazine in anaesthesia for cattle.]**—*Thesis Paris, (Alfort)* pp. 71. **2215**

From trials in cattle with chlorpromazine alone it was concluded that the drug does not induce sufficient calm for an operation to be carried out on the standing animal. On the other hand, for premedication, it produced good results in cattle and sheep when given before the injection of thiopentone sodium, prolonging the narcosis and reducing considerably the dose of anaesthetic. The dose of chlorpromazine recommended is 0·8–1 mg./kg. by the intravenous route or 1·2–1·5 mg./kg. by the intramuscular route. It should precede the injection of thiopentone sodium by 5 min. if it is given i/v, and by 15 min. if it is given i/m. Apart from anaesthesia, chlorpromazine is indicated in the symptomatic treatment of colic, acute meningoencephalitis, tetanus, laminitis, urticaria, shock, and obstetrical cases.—M.G.G.

GRAVES, J. H. (1957). **Chlorpromazine as a preanesthetic and tranquilizing agent in veterinary medicine.**—*Vet. Med.* **52,** 185-187. [Author's summary slightly modified.] **2216**

Chlorpromazine was used in treating over 100 dogs. Single 25 mg. or 12 mg. doses of the drug were given intramuscularly as premedication in 84 surgical procedures. Anaesthetic induction—with pentobarbital sodium, thiamyl sodium, or ether—was in all cases smooth. The anaesthetic dosage was reduced by 20–60%. Emergence from anaesthesia was quiet. No vomiting occurred, either preoperatively or postoperatively. Because of its antiemetic property and its beneficial effect on bronchial reflex irritability, chlorpromazine seemed preferable to morphine for premedication.

Chlorpromazine proved useful in tranquillizing excited, irritable animals for minor surgery and dressing of wounds. It was also useful in checking itching and coughing, and, as "first aid" after accident, in relaxing dogs with fractures and other injuries.

ARNOLD, J. P., SAUTTER, J. H., KITCHELL, R. L. & LARSON, L. L. (1957). **Local effects of various concentrations of hexylcaine hydrochloride and procaine hydrochloride on the pudendal nerve and the infraspinatus muscle.**—*Vet. Med.* **52,** 175-178. [Authors' summary slightly modified.] **2217**

Procaine hydrochloride in 1 and 2% concentrations did not produce gross or microscopic changes in the pudendal nerve of calves or in the tissues surrounding it. With higher concentrations (3%, 4%, and 5%) there was a slight tendency to oedema within the nerve trunk. The various concentrations of procaine hydrochloride produced no gross changes in the infraspinatus muscle. Perineural injection of procaine hydrochloride in concentrations from 1 to 5% in amounts up to 10 ml. was not associated with changes in the nerve or the surrounding tissues of calves.

The 1 and 2% solutions of hexylcaine hydrochloride appear to be a safe agent for local infiltration in calves. The 3% solution of hexylcaine hydrochloride could be used for local infiltration but is less desirable than the lower concentrations. The higher concentrations (4% and 5%) would appear not to be desirable for infiltration, but may be used for nerve blocking as there was no evidence of damage to individual nerve fibres.

See also abstr. **1955** (antibiotics in mastitis); **1959-1964** (TB.); **1967** (antibiotics in glanders); **1972-1973** (E. coli); **1992-1999** (menaphthone in brucellosis); **2016** (antibiotics and bacterial content in milk); **2029** (lumpy wool); **2032** (P.P.L.O.); **2033** (sensitivity to nitrofurans of equine uterine micro-organisms); **2039-2040** (trypanosomiasis); **2046-2048** (coccidiosis); **2072** (sulphamethazine in bovine malignant catarrh); **2088** (distemper); **2115-2118** (insecticides); **2129** (anthelmintic properties of cinnamic acid esters); **2132 & 2143** (anthelmintics); **2177** (di-phenthane 70 in bovine diarrhoea); **2186** (sulphonamides in reindeer bronchopneumonia); **2187** (rutin in diseases of kidneys in dogs).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

ERICKSON, B. R., SMITH, D. L. & D'AMOUR, F. E. (1957). **Effect of environmental temperature in traumatic shock.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 1-4. [Authors' summary modified.] **2218**

The effect of 9 environmental temperatures between 10° and 40°C. on survival time and body temp. of rats in traumatic shock was studied. The optimum temp. was 20°. Survival time at this temp. was significantly longer than at 17·5° or 25°; lower or higher temperatures were increasingly harmful. Animals in shock appeared to be poikilothermic, their body temp. tending to approach the environmental temp.

SCHMIDT-NIELSEN, K., SCHMIDT-NIELSEN, B., JARNUM, S. A. & HOUPT, T. R. (1957). **Body temperature of the camel and its relation to water economy.**—*Amer. J. Physiol.* **188,** 103-112. [Authors' discussion modified.] **2219**

The very high rectal temperature found under conditions of heat stress and water deprivation is not necessarily a sign of failure of heat regulation in the camel, although this seems to be true for man and some other mammals. The view that a high rectal temperature is a disadvantage may have received a too widespread acceptance; high body temperature under heat stress is no indication of low heat tolerance in camels, and the same may apply to cattle. [See also *V.B.* **26,** 3012.]

I. CARTER, H. B. & CLARKE, W. H. (1957). **The hair follicle group and skin follicle population of Australian Merino sheep.**—*Aust. J. agric. Res.* **8,** 91-108. **2220**

II. CARTER, H. B. & CLARKE, W. H. (1957). **The hair follicle group and skin follicle population of some non-Merino breeds of sheep.**—*Ibid.* 109-110. **2221**

I. Skin specimens from 495 Australian Merino ewes were collected from 22 flocks, including 9 parent studs out of the 17 identified in the contemporary population. The biopsy method of collecting skin samples, the preparation of paraffin serial sections, and counting and measuring techniques are described. Flock means and standard errors are presented for: total number of follicles per sq. mm., number of primary (P) follicles per sq.mm., number of secondary (S) follicles per P follicle, diameter of P fibres, diameter of S fibres, diameter of P+S fibres, ratio of P fibre diameter to S fibre diameter. The range of individual values for the above measurements within the four important strains of the Australian Merino are tabulated. The data show important differences between flocks, and some characteristic features of strains. Some implications for genetic studies are discussed.

II. Skin specimens from 494 ewes were collected in flock samples of 11–23 animals from Corriedale, Polwarth, Lincoln, English Leicester, Border Leicester, Romney Marsh, Southdown, Dorset Horn, Suffolk, Ryeland, Scottish Blackface, Welsh Mountain, Swaledale, Cheviot, Wiltshire and Swedish Landrace breeds. The biopsy, histological and counting methods were similar to those described in the preceding paper (I above). Flock means, standard errors and ranges of individual values within a flock are presented for estimates of follicle numbers, follicle type ratios and fibre diameters, as in the preceding paper. The data, considered wtih those of the preceding paper, show that hair follicle groups are much smaller in most British short-, long-, and carpet-wool breeds than in the Australian Merino. Hair follicle groups of intermediate size are found in the Corriedale and Polwarth breeds, which have developed from crossing with the Merino or its derivatives.

—MARGARET H. HARDY.

AUBER, L. & RYDER, M. L. (1956). **Anomalies in structure and development of wool fibres.** — *Proc. int. Wool Text. Res. Conf. Aust.*, 1955. Vol. F. pp. 36-62. [Melbourne: C.S.I.R.O.] [Authors' summary copied *verbatim.*] **2222**

The epithelia that give rise to the fibre and the follicle wall are subject to various forms of degeneration and malformation. Newly observed instances of these anomalies are described and those known previously are reviewed. Keratinization of the fibre may become inhibited, or its keratinized tissue may undergo secondary decomposition. In some of these instances, local inflammation is evident. Comparative observations on the progress of keratinization of the fibre are discussed. Possible causes of the anomalies and their significance in fleece production are indicated.

ACHESON, G. H., DAWES, G. S. & MOTT, J. C. (1957). **Oxygen consumption and the arterial oxygen saturation in foetal and new-born lambs.**—*J. Physiol.* **135,** 623-642. [Authors' summary copied *verbatim.*] **2223**

The rate of O_2 consumption has been calculated in foetal lambs from measurements of umbilical blood flow and arteriovenous O_2 difference. The rate of O_2 consumption has also been measured in newly delivered lambs by a spirometer connected to a closed-circuit respiration pump. In anaesthetized foetal and newborn lambs, in which shivering was avoided, O_2 consumption decreased when the arterial O_2 saturation fell below 35%. These observations are discussed in relation to the effect of changes in the O_2 content of the inspired air on O_2 consumption in new-born and adult animlas, and to the conditions of intra-uterine life. The rate of O_2 consumption per kg. body wt. did not alter significantly during the last half of gestation in lambs, in spite of a great increase in foetal weight. This is mainly due to a large rise in umbilical blood flow. Since arterial O_2 saturation does not alter appreciably over this period, and since anoxaemia causes an increase in blood pressure and umbilical flow in mature lambs, it is suggested that the oxygen tension of the arterial blood may be one of the principal determinants of umbilical flow towards the end of gestation.

NAIRN, R. C. (1957). **Fluid transfer from the peritoneal to the pleural cavities in rodents.**—*Brit. J. exp. Path.* **38,** 62-66. [Abst. from Survey of paper (p.i.).] **2224**

When Ringer solution was injected i/p into rabbits and rats, fluid appeared in the pleural cavity. When similar volumes of fluid were injected s/c pleural effusions did not occur. When graphite was added to the injected fluid, it could be seen after fixation in diaphragmatic lymphatics. The transdiaphragmatic lymphatics are considered to provide a direct pathway for fluid from peritoneal to pleural cavities.

KOLB, E. (1956). Untersuchungen über das Vorkommen von Histaminase und Diaminoxydase im Serum von Haustieren (Wiederkäuer, Schweine, Pferde) sowie bei *Escherichia coli* und *Streptococcus faecalis.* [**Occurrence of histaminase and diamino-oxidase in the serum of ruminants, pigs, horses and in *E. coli* and *Str. faecalis.*]**—*Zbl. VetMed.* **3,** 570-591. [English, French and Spanish summaries.] **2225**

The activity and range of serum histaminase and diamino-oxidase was studied in adult cattle, calves, sheep, goats, horses and pigs. Six strains of *E. coli* and two strains of *Str. faecalis* were also studied in connexion with histamine formation in the digestive tract. For determination of histaminase activity a method described by Kapeller-Adler [*V.B.* **20,** 739] was used. A pregnancy test for women, described by Zeller & Birkhäuser [*V.B.* **12,** p. 392] based on the diamino-oxidase content of serum was used for the determination of diamino-oxidase. In contrast, however, with findings in women, diamino-oxidase was present also in the serum of non-pregnant animals. Pregnancy had no effect on the degree of enzyme activity. There was no difference between enzyme activity in adult cattle and calves. In ruminants activity of both enzymes was about equal, whereas in horses and pigs diamino-oxidase was very low. In horses with laminitis there was an increase in histaminase activity. The bacterial strains examined appeared to be free from histaminase and diamino-oxidase.—E.G.

YAMAUCHI, S. (1956). Untersuchungen über Phosphatasen in Zahngeweben. [**Phosphatase in teeth.**]—*Jap. J. vet. Res.* **4,** 89-100. [In German.] **2226**

Characteristics of dental phosphatase from horses, cattle, sheep and rabbits were studied by biochemical methods. In horses pH optima of alkaline phosphatase of dental pulp, cement, enamel, dentine and gums were similar. Acid phosphatase was not demonstrable in dental tissues. Dental phosphatase was activated by calcium, magnesium and manganese and inhibited by fluoride, copper, mercury, barium, zinc and potassium.—E.G.

GOTTERER, G. S. & WILLIAMS-ASHMAN, H. G. (1957). **Some factors which influence vesiculase action.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 60-64. [Authors' summary slightly modified.] **2227**

Studies are presented on the influence of temperature and of some chemical substances on the coagulation of proteins of the seminal

vesicle secretion by the prostatic enzyme vesiculase. Experiments involving delayed addition of metal chelating agents and of heavy metal ions revealed that the coagulation process is in two distinct stages.

NEIL, M. W., WALKER, D. G. & WARREN, F. L. (1957). **Fructose formation in goat placenta.** —*Biochem. J.* **65,** No. 3. p. 35P of Proceedings. [Copied *verbatim* from authors' abst.] **2228**

In contrast to glucose, injections of sorbitol into the maternal circulation produce only small rises in foetal plasma fructose concentration, whereas distinct rises in maternal plasma fructose and glucose occur. Injection of sorbitol into the foetal circulation produces a rise in foetal plasma fructose but not glucose. Fructose injection into the maternal circulation produces a rise in maternal plasma glucose, but a corresponding injection into the foetus does not raise the foetal plasma glucose. Thus the mechanism whereby plasma glucose is formed from injected fructose in the maternal goat is not operative in the foetus, representing an interesting difference between adult and foetal metabolism. Perfusion of the placenta with dextran-saline containing sorbitol did not show an appreciable increase in the rate of fructose formation over that observed in a sorbitol-free control perfusion. This is perhaps surprising since sorbitol dehydrogenase has been found to be present in goat placenta. This enzyme is also present in the placenta of the sheep and cow, but not in that of the pig which is also an ungulate. Injection of glucose into the maternal circulation has been followed by analyses of cotyledons for phosporic acid and its esters. Only fructose-1, 6-diphosphate accumulated to a marked extent.

ANNISON, E. F. (1956). **Nitrogen metabolism in the sheep. Protein digestion in the rumen.** —*Biochem. J.* **64,** 705-714. **2229**

Studies on the digestion of protein by sheep show that measurable quantities of amino-acids and peptides arise in the rumen, but 2–3 hours after the cessation of feeding there is a fall. This suggests a raipd uptake or diminution of the amino-acids by the rumen micro-organisms, since analyses of portal and arterial blood do not suggest that amino-acids are absorbed from the rumen. Evidence was obtained that the presence of carbohydrate increased the rates of disappearance of ammonia and amino-acids from the rumen. *In vitro* experiments with washed rumen organisms showed that casein, arachis and soya protein were readily degraded, but bovine albumin, zein and wheat gluten were less extensively attacked.—J. A. NICHOLSON.

BELEN'KII, N. G. & MESCHERYAKOVA, M. F. (1956). **[Protein metabolism of animals in various functional states of the central nervous system.]**—*Proc. Lenin Acad. agric. Sci.* **21,** No. 11. pp. 22-26. [In Russian.] **2230**

It was suggested that protein metabolism depended in the first instance on the functional state of the c.n.s. In dogs with prolonged cortical inhibition resulting from continuous barbiturate narcosis, protein metabolism had a diphasic character. A brief initial phase, lasting 2–4 days, was characterized by increased assimilation of protein. [The protein used was 'therapeutic serum' ("LSB"), administered intravenously or rectally.] The second phase, from the 2nd or 4th to the 14th day of narcosis, consisted of a sharp increase in protein catabolism. —R.M.

FREINKEL, N. & LEWIS, D. (1957). **The effect of lowered environmental temperature on the peripheral metabolism of labelled thyroxine in the sheep.**—*J. Physiol.* **135,** 288-300. [Authors' summary slightly modified.] **2231**

Thyroxine (^{131}I-labelled) was administered during the winter months to grazing shorn and unshorn sheep in order to assess the effects of reduced environmental temp. on the peripheral degradation of thyroid hormone.

Half-time values for the turnover of extra-thyroidal thyroxine averaged 25 hours in the shorn and 38 hours in the unshorn animals. The enhanced rate of thyroxine degradation in shorn sheep was accompanied by significant functional and histological evidence of thyroidal hyperactivity. No significant differences in the circulating levels of protein-bound iodine were demonstrated between the shorn and unshorn groups.

PENNINGTON, R. J. (1957). **Some effects of propionate upon acetate metabolism in animal tissue slices.**—*Biochem. J.* **65,** 534-540. [Author's summary modified.] **2232**

Propionate, in equimolar concentration, largely abolished the production of radioactive CO_2 from carboxyl-labelled acetate by rat-liver slices. Butyrate, *iso*valerate, valine, isoleucine and methionine inhibited acetate oxidation to varying degrees. The oxidation of propionate was not decreased by acetate. Acetate oxidation by slices of other rat tissues was inhibited by propionate, but to a lesser degree than with rat-liver slices. The effects of propionate on acetate metabolism by sheep-liver slices were much

smaller than those observed with rat liver. The endogenous ketone-body production of sheep liver was less than that of rat liver.

EVANS, J. V., HARRIS, H. & WARREN, F. L. (1957). **Haemoglobin types in British breeds of sheep.**—*Biochem. J.* **65,** No. 3. p. 42P of Proceedings. [Abst. from authors' abst.] **2233**

The haemoglobin types in some 4,500 sheep representing 33 British breeds were determined by paper electrophoresis. Large differences in the relative frequencies of the three types of sheep (designated types A, B, or AB according to the type of haemoglobin present) occurred from breed to breed. For example, of the Scottish Blackface 61% were of type A, 33% AB, and 6% B; of the North Country Cheviots 18% were A, 51% AB, and 31% B; in the South Devon 8% were A, 36% AB, and 56% B; in the English Leicester no type A animals were found, 2% were AB, and 98% B. The gene frequencies in different flocks of the same breed were in good agreement. The significance of this haemoglobin polymorphism in sheep, and the reason for the very large differences in gene frequencies from breed to breed, remain obscure. In general, the lowland breeds were predominantly of haemoglobin type B, while haemoglobin A is much more conspicuous in the mountain and hill breeds. Thus among 18 lowland breeds, three-quarters had gene frequencies for B greater than 0·8, while in the mountain and hill breeds the opposite was the case. This suggests that the haemoglobin type may perhaps be of some adaptive significance. However, so far no obvious differences in any other characteristic of sheep of different haemoglobin types within the same breed have been detected. [See also *V.B.* **26,** 1416 & **27,** 1308.]

BELL, D. J. (1956). **D-glucose in the blood of the domestic fowl.**—*Biochem. J.* **64,** No. 4. p. 55P of Proceedings. **2234**

D-glucose was the sole sugar detectable by paper electrophoresis in the concentrated and deproteinized blood of domestic fowls. The whole blood of hens had a higher glucose level than that of cocks, probably because of differences in r.b.c. volume. Fowl r.b.c. contained little or no glucose.—D. S. PAPWORTH.

COATS, D. A. & WRIGHT, R. D. (1957). **Secretion by the parotid gland of the sheep: the relationship between salivary flow and composition.**—*J. Physiol.* **135,** 611-622. [Authors' summary modified.] **2235**

There is a two-phase relationship between the electrolyte composition of sheep's parotid saliva and the rate of salivary flow. During the initial establishment phase lasting 1–2 min. after stimulation of the parotid motor nerve the concentrations of sodium, potassium, chloride, bicarbonate and phosphate show continuous variation and differ from those found later in the established flow. After the initial phase has been completed there is a relationship between the ionic composition of saliva and its rate of production. Increasing salivary flow is associated with an increase in sodium and bicarbonate and a decrease in potassium and phosphate. There is no clear relationship between salivary flow and the concentration of chloride.

During the initial phase the salivary concentrations of all ions differ from the concentrations which would be predicted from the subsequent concentration-flow relationships.

The changes in the conc. of salivary cations during the initial phase of secretion are more complex than those of the anions. In both cases the concentration changes are complementary, and there is no significant change in the osmolarity of the saliva secreted over the entire range of flows.

ARKHIPOVETS, A. I. (1956). **[Age characteristics of salivation in piglets.]** — *Sechenov J. Physiol.* **42,** 882-886. [In Russian.] **2236**

The amounts of nitrogen and dry matter of saliva varied with the type of feeding and the age of the piglet. In piglets aged 2 months there was great variation in the dry matter (0·64–1·09%) and nitrogen (0·3–0·9 mg./ml.). After weaning there was a gradual increase in nitrogen and dry matter content, while the volume remained almost constant. With increasing age the rate of secretion and the amylase content of the saliva increased.—R.M.

TITCHEN, D. A. (1957). **The nervous control of the gastro-intestinal tract.**—*Abst. Diss. Univ. Camb.* 1954-55. pp. 60-61. [Abst. copied *verbatim.*] **2237**

The reflex responses of the gut were examined in decerebrate preparations in which a more exact analysis of the nature of the responses was obtained than has hitherto been attempted.

The reflex nature of the contractions of the oesophageal groove was shown in decerebrate preparations of young ruminants. The efferent limb of the reflex arc consists of cholinergic nerve fibres mainly in the dorsal abdominal vagus nerves. The main afferent nerve fibres concerned are those of the superior laryngeal nerves. Central inhibition of the reflex contractions was obtained by stretch of the abomasum, stimulation of the central end of abomasal branches of

the ventral abdominal vagus nerves and of afferent nerve fibres in the glossopharyngeal nerves. A peripheral inhibition of the reflex contractions was obtained by stimulation of the splanchnic nerves and the intravenous injection of adrenalin.

The effect of stimulation of the vagus and sympathetic nerves on the reticulum varied; both contractions and inhibition of its tone were observed under certain conditions.

Reflex contractions of the reticulum similar to those observed in conscious animals were obtained after stimulation of the sympathetic nerves and the injection of adrenalin. Both the afferent and efferent nerve fibres run in the vagus nerves. The introduction of acid into the abomasum, stretch of the reticulum, the omasal canal and the rumen, tactile stimulation of the oesophagus and abomasum, and stretch of the abomasum after the splanchnic nerves were cut, stimulated reflex contractions of the reticulum. Inhibition of the reflex was produced by distension of the abomasum when the splanchnic nerves remained intact.

Evidence in support of the reflex nature of the gastro-colic reflex, the response of the colon to distension of the stomach, was obtained in decerebrate preparations of the dog and cat.

The results are discussed both in relation to previous work and to the evidence they provide for the nature of the organization of the nervous control of movements of the alimentary tract.

JEWELL, P. A. & VERNEY, E. B. (1957). **An experimental attempt to determine the site of the neurohypophysial osmoreceptors in the dog.**—*Phil. Trans. Ser. B* **240,** 197-324. **2238**

The object of the authors' investigation was to define the site of the osomoreceptors, a term applied to those hypothetical sensory elements that respond to changes in the osmotic pressure of their vascular environment, and through which the release of antidiuretic hormone from the neurohypophysis is physiologically regulated. It was concluded that the osmoreceptors are situated in the anterior hypothalamus.—R.M.

CLARK, S. M. & IBALL, J. (1957). **Structure of bone in relation to growth.**—*Nature, Lond.* **179,** 94-95. **2239**

X-ray diffraction studies show that no preferred orientation of the inorganic crystals occurs in the femora of rats until about 3 days after birth. The orientation increases until, at about 13 days, it is as marked as in adult bone.

—J. A. NICHOLSON.

EIKELENBOOM, C. (1956). Onderzoek naar de uitscheiding van 17-ketosteroiden, corticosteroiden en carotoenderivaten in de urine van het paard. [**Investigation on the excretion of 17-ketosteroids, corticosteroids and carotene derivatives in horse urine.**]—*Thesis, Utrecht* pp. 96. [In Dutch. English summary.] **2240**

E. listed the steroids which have been isolated by others from horse urine, and determined the amount of 17-ketosteroids in the urine and semen of 3 mares, 2 stallions and a castrated mare and stallion, by the method described by W. Zimmerman (1935). The amount in urine varied from 0·59–0·86 mg./litre in mares and 4–6 mg./litre in stallions. These figures were too high because of the presence of ionone derivatives of carotene, which also gave a positive Zimmerman reaction. Injection of A.C.T.H. did not influence the excretion of 17-ketosteroids. Corticosteroids in the urine, determined by an oxidation method, amounted to 0·47–2·36 mg./litre in 20 non-pregnant mares, 1·2–8·5 mg. in 6 pregnant mares, and 0·3–7·4 mg. in 2 stallions.—R.M.

ÁRVAY, A. & NAGY, J. (1956). **The daily periodicity of the spontaneous motility of the normal and denerved uterus. The physiology of uterine function. I. Methods. II. The effect of the hormonal environment on the function and structure of the uterus.**—*Acta physiol. Acad. Sci. hung.* **10,** 199-214 & 215-228. [In English. Russian summary.] **2241**

I. The authors describe a method of recording the activity of uterine muscle in the unanaesthetized dog, which involves the permanent double fistulation of each of the uterine horns. Chronic denervation of one uterine horn resulted in loss of rhythm and regularity of spontaneous contractions recorded from the denervated horn as compared with those of the non-denervated horn in the same animal. A diurnal periodicity of spontaneous uterine activity was found consistently in three dogs studied repeatedly, constractions being more frequent in the morning and early afternoon than in the evening and night. This applied to both denervated and non-denervated horns.

II. In eight dogs with uterine fistulae the effects of oestrogens on spontaneous uterine contractions and on uterine reactivity to oxytocin were studied repeatedly. Both natural and synthetic hormones were used at 200 i.u./kg. body wt. = 0·02 mg./kg. It was consistently found that spontaneous uterine contractions ceased 2–3 hours after administration of oestrogens irrespective of whether given i/m or i/v or whether given in oil or water. This effect lasted for 2–3 days. Coincident with the depression of spon-

taneous activity there was a marked augmentation in response to a standard dose of posterior pituitary extract which prior to oestrogen produced a barely detectable response. It is postulated that uterine depression is due to activation of hypothalamo-pituitary mechanism with consequent release of progesterone. The results are discussed in relation to the work of many previous authors with whom they are at variance.
—R. J. FITZPATRICK.

VOLLMERHAUS, B. (1957). Untersuchungen über die normalen zyklischen Veränderungen der Uterusschleimhaut des Rindes. **[Studies on normal cyclical changes in the uterine mucosa of the cow.]**—*Zbl. VetMed.* **4**, 18-50. [English, French and Spanish summaries. English summary slightly modified.] **2242**

The uterine mucosa of 80 clinically healthy slaughter cattle was examined histologically and the results were analysed statistically. The cyclical changes in the mucosa involve the whole organ, but are most marked in the uterine horns and are the same in virgin heifers as in animals that have been pregnant. The glandular tissue reaches its maximum of 27% of the total volume of the uterine mucosa on the 12th day of the cycle: the minimum of 4·5% occurs on the 1st day. This increase or decrease in the relative volume of the glandular tissue results from a marked convolution of the glands and also from their extension, caused by variations in the amount of intestitial fluid (oedema). The absolute length of the glandular tissue is the same in each phase of the cycle. The uterine glands are active throughout the secretory phase (5th to 12th day). Secretion begins near their orifice and extends progressively towards the acini. In contrast, the secretory activity of the surface epithelium begins earlier and reaches its peak on the 1st and 2nd days of the cycle.

NEEDHAM, D. M. & CAWKWELL, J. M. (1957). **The protein composition and nucleic acid content of the rat uterus in different states.**—*Biochem. J.* **65**, 540-545. [Authors' summary slightly modified.] **2243**

Four protein fractions, ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) were estimated in the rat uterus in mid-oestrus, at the end of pregnancy and after ovariectomy. The fractions were: (i) the protein soluble in 1·25 M potassium chloride solution; (ii) the protein precipitated on dilution of this extract; (iii) the fraction of the residue soluble in 0·1 N sodium hydroxide solution; (iv) the insoluble residue. When the results are expressed as percentages of the total protein, the most important changes in the protein fractions were a significant fall in (i) and rise in (iv) after ovariectomy, as compared with the oestrous state; and a significant rise in (i) and fall in (iv) by the end of pregnancy, as compared with the oestrous state. When certain corrections were made there was significantly less of fraction (ii) after ovariectomy than in the other two states. The RNA/DNA ratios in mid-oestrus, at the end of pregnancy and after ovariectomy were 1·29, 2·34 and 0·39 respectively.

WOODS, J. W. (1957). **The effects of acute stress and of ACTH upon ascorbic acid and lipid content of the adrenal glands of wild rats.**—*J. Physiol.* **135**, 390-399. [Author's summary modified.] **2244**

No metabolic depletion of the adrenal cortex occurred in wild Norway rats under conditions of acute stress which regularly produced depletion of adrenal ascorbic acid and sudanophilic lipid in domesticated rats. Administration of A.C.T.H. did result in ascorbic acid and lipid depletion of the adrenal cortex in wild rats, but the results suggest that more of the hormone is necessary in wild than in domesticated rats. The validity of ascorbic acid and lipid assays as a method of detecting adrenal cortical activity is discussed. It appears that both assays are capable of detecting at least high levels of activity. Consideration of results in the light of evidence from the literature suggests that in many mammals the alarm reaction does not include an initial phase of adrenal cortical metabolic depletion. This seems to be so in the case of the wild rat, the cat, the mouse, the hamster and in some birds.

DICKSON, A. D. & MILLEN, J. W. (1957). **The meningeal relationships of the glycogen body in the chick.**—*J. Anat., Lond.* **91**, 47-51. **2245**

The glycogen body is a gelatinous mass which appears as an oval swelling on the dorsal surface of the spinal cord at the level of the large dorsal roots which are distributed through the sciatic nerves. It contains large quantities of glycogen which is its only known function. It is the shape of a collar stud and its meningeal relationships show that it is partly intrapial and partly subpial in position. The central canal passes through the ventral portion.
—J. A. NICHOLSON.

See also absts. **2148** (rumen studies in sheep); **2283** (book, comparative physiology of nutrition).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

QUINET, G. (1955). Recherches sur le tissu conjonctif des carcasses de bovins hydrohémiques. Rôle de la thyroïde dans l'hydrohémie. **[Studies of the connective tissue of hydraemic carcasses. Role of the thyroid in this condition.]**—*Thesis Paris, (Alfort)* pp. 54. **2246**

After staining with toluidine blue, there was only slight metachromasia in connective tissue from normal cattle and from a cow with oedema. But metachromasia was marked in connective tissue from 14 cattle with hydraemia, revealing an abnormally high level of mucopolysaccharide, identified as hyaluronic acid. A thyroid-inhibitory substance was demonstrated in the urine of 11 hydraemic cattle, which was not present in the urine of normal cattle or of 2 cattle with oedema. It is concluded that there is a similarity between this condition and myxoedema in man.—M.G.G.

BLAKELOCK, J. H. & ALLEN, R. E. (1956). **A survey of rats trapped in the Wellington area for ectoparasites and organisms of the salmonella, pasteurella, and leptospiral groups.** —*N. Z. vet. J.* **4,** 154-156. [Authors' summary modified.] **2247**

Neither *Pasteurella pestis,* nor the vector flea *Xenopsylla cheopis,* was found in the 183 rats examined. No organisms of the *Salmonella* group were isolated, nor was serological evidence found of the five types of leptospira used for testing.

HIEPE, T. (1957). Einrichtung und Aufgaben eines Herdengesundheitsdienstes für Schafe (HGD) und Bericht über die 1955 geleistete Arbeit. **[Organization and tasks of a health service for sheep in Eastern Germany. Report on work performed in 1955.]**—*Mh. VetMed.* **12,** 52-56. **2248**

The health service works in close co-operation with practising and civil service veterinary surgeons. Amongst other functions it gives assistance in times of severe outbreaks of disease and brings veterinary students into closer contact with sheep diseases than heretofore. The report deals with the most important diseases of sheep met with in 1955 and outlines control methods.—H. SCOTT MCTAGGART.

See also absts. **1983** (penetration of eggs by S. typhi-murium); **1984** (detection of Salmonella in blood and organs); **2000** (brucellosis in man from milk); **2011** (survival of Leptospira in meat); **2016** (effect of antibiotics on bacterial content of milk); **2057-2058** (rabies); **2123-2124** (Trichinella); **2282** (report, U.S.S.R.).

REPRODUCTION AND REPRODUCTIVE DISORDERS

HANSSON, A. (1956). **Use of monozygous cattle twins in reproductive studies.**—*IIIrd. Int. Congr. Anim. Reprod., Cambridge,* Plenary Papers pp. 112-116. **2249**

Heredity is so important in bull behaviour as to make the study of environmental effects on it difficult. This does not apply to cows, except specifically in the case of cystic disease and some forms of repeat breeding which H. considers to be basically similar. On the very lowest levels of heifer nutrition, oestrus was weak, and irregular when it did appear.—F. L. M. DAWSON.

ROWSON, L. E. A. (1956). **The low temperature preservation of germinal cells.**—*IIIrd. Int. Congr. Anim. Reprod., Cambridge,* Plenary Papers pp. 75-80. **2250**

The limit for storage at −79°C., seems to be 6–7 years, owing to autointoxication through enzyme action. There is 20–50% destruction of spermatozoa by the time the sample is thawed out. Lovelock showed the main cause of mortality to be increasing salt concentration through removal of water as ice. An experiment on maintaining certain temperatures passed through during normal freezing confirmed that −20° to −30° is the danger range. The greatest improvement secured in recovery rates has resulted from adding egg yolk to both glycerol- and spermatozoa-containing fractions. There is some evidence that the cell membrane becomes more permeable with age; equilibration may therefore have to last longer if glycerol is added almost at once after collection: this explains the divergent results on equilibration time. But Emmens, using a phosphate diluent, showed that this was not likely to be the complete explanation. Freezing undiluted gives about 23% reduction in conception rate. R. discussed survival of *Tr. foetus* after freezing and suggested that it is a good way to preserve the strains. *Corynebacterium pyogenes* also survives freezing. Sheep eggs can be stored for 3 days at 10°C. and appear normal after freezing, but no pregnancies resulted from transplanting 18 such eggs. Normally, in the sheep, antibodies to the ovarian graft soon develop and destroy it. Medawar, however, showed that mice, behaving in the same way, can be desensitized and made graft-tolerant by injecting donor's blood cells into the early foetus.

—F. L. M. DAWSON.

FOSTER, T. S. (1956). **Gonadotrophins of bovine blood and urine.**—*Canad. J. agric. Sci.* **36**, 463-470. **2251**

Efforts were made to find a suitable test to diagnose early bovine pregnancy by assaying bovine blood and urine. Attempts were made to determine the titre of gonadotrophic activity by means of the seminal vesicle weight response of immature rats and the liberation of spermatozoa by male leopard frogs (*Rana pipiens*). No activity could be detected in samples from non-pregnant cows, nor during the first 15 weeks of pregnancy. Evidence is presented that exogenous chorionic gonadotrophin is rapidly inactivated in the cow—this inactivation being more complete in the bovine than in other species.

—R. V. L. WALKER.

TRIMBERGER, G. W. & FINCHER, M. G. (1956). **Regularity of estrus, ovarian function, and conception rates in dairy cows.** — *Bull. Cornell Univ. agric. Exp. Sta.* No. 911. pp. 23. **2252**

Observations were made from 1948–53 on 400 cows, half of which were controls and half were an experimental group in which frequent ovarian examinations were made to determine the relationship of the condition of the ovary to the frequency of oestrus and to conception rates. The first post-partum oestrus occurred within 60 days in 67% of the control and 70·5% of the experimental group and within 90 days in 93 and 93·5%, but ovarian examination showed the actual percentages to be 81·5 and 97 respectively. There were 35 cases with 49 silent oestrous periods before the first externally indicated oestrus. Of the 500 intervals between oestrus in the experimental group, 60·4% were between 18 and 25 days, exclusive of the short intervals due to cystic ovaries 2·2% were less than 18 days, and 37·4% were over 25 days. Irregular long intervals resulted in 18·6% of cases from silent oestrus, in 15·2% from persistent corpus luteum, and in 3·6% from smooth non-functional ovaries. In both groups, conception rates were more than 60% from the first service and also in the 20 cows artificially bred during silent oestrus, in those with normal oestrus after a silent oestrus and in those with oestrus after treated persistent corpus luteum and smooth non-functional ovaries. The conception rate in the 34 cows served after recovery from cystic ovaries was only 41% for the first service and the fertile cows required 3·14 services per conception. In the 36 cows served during oestrus with a cycle of less than 18 days only 33·3% conceived. It is advisable to withhold service from cows with oestrous cycles of less than 18 days (usually due to cystic ovaries), until treatment has been given.—A. ACKROYD.

MCDONALD, M. F. & RAESIDE, J. I. (1956). **Use of the cervical mucus smear in assessing ovarian activity in the ewe.**—*Nature, Lond.* **178**, 1472-1473. **2253**

Using Papanicolau's technique for the study of cervical mucus, the authors examined the cervical secretions from pregnant, castrated and hysterectomized ewes as well as from ewes receiving oestrogens, progesterone and gonadotrophin. Fern-like patterns were present in association with oestrus, and it was concluded that the cervical mucus smear is highly sensitive to oestrogen and progesterone. The technique is therefore suitable for determining the quantitative production of ovarian hormones in the ewe.

—J. A. NICHOLSON.

ARTHUR, G. H. (1956). **Data on sheep reproduction derived from abattoir material.**—*J. comp. Path.* **66**, 345-353. [Author's conclusions copied *verbatim*.] **2254**

The ovaries of the non-pregnant ewe show cyclic activity until March. Both function equally. There is a slight preponderance of pregnancies in the right uterine horn. Occasionally an embryo migrates to the other horn. Loss of eggs and embryos may amount to 8·9%. Monozygous twinning may occur but the occurrence of ovine freemartins is unlikely. Three out of four single foetuses present anteriorly but half the twins are in posterior presentation.

INKSTER, I. J. (1956). **The relationship between face cover and reproductive efficiency in Romney ewes.**—*Proc. N. Z. Soc. Anim. Prod.* **16**, 66. **2255**

In a series of flocks of Romney sheep of mixed ages the lamb crop (in terms of lb. of lamb weaned per ewe mated) was inversely related to the amount of wool on the face of the ewe, regardless of environment, although it was not always the same phase of reproduction which was affected.—H. SCOTT MCTAGGART.

HAEERSANG, M. (1956). Beitrag zur puerperalen Septikämie des Schweines. [**Puerperal septicaemia in sows.**]—*Tierärztl. Umsch.* **11**, 446-448. **2256**

H. studied the clinical picture of puerperal septicaemia in 19 sows of various ages and attributed the conditions to faulty metabolism.—E.G.

VENGE, O. (1956). **Effect of oestrogen on reproduction in mink.**—*Nord. VetMed.* **8**,

966-974. [In English. German and Danish summaries.] **2257**

Only 2 out of 8 female mink injected with 100 i.u. of oestrogen on the day before being mated became pregnant compared with 7 out of 10 controls; the average number of kits was only 0·88 in a litter over the number of females mated compared with 3·8, and the average litter size was 3·5 compared with 5·43. In 10 other female mink, even 50 i.u. of oestrogen decreased the litter size and there was an increased number of "empty" females. Oestrogen treatment of mink should be abandoned.—A. Ackroyd.

Russ, E. M. & Raymunt, J. (1956). **Influence of estrogens on total serum copper and caeruloplasmin.**—*Proc. Soc. exp. Biol., N.Y.* **92,** 465-466. **2258**

Plasma from 8 human beings, affected with coronary occlusion, myxoedema, or xanthomatosis, was analysed for copper content before and after a course of oestrogen therapy. In all cases there was, after 3–4 weeks' treatment with 0·25–1 mg. daily of ethinyl oestradiol, a marked increase in the content both of total copper and of caeruloplasmin (copper-bound protein).

—M.G.G.

Johnson, J. F. (1957). **Changes in plasma prothrombin, Ac-globulin and antithrombin concentration following intravenous administration of estrogens.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 92-94. [Author's summary modified.] **2259**

Solutions of oestrogenic steroids were administered i/v to dogs. There was a sharp rise in the plasma Ac-globulin and prothrombin levels. The levels began to rise within the first 15 min., reached a peak in about 1½ hours. In about 3 or 4 hours normal concentrations were again found. A small decrease in antithrombin activity of the plasma was observed. Theoretically all these changes tend to enhance the coagulability of the blood.

Budy, A. M. (1956). **Osteogenetic properties of estrogenic hormones.**—*Ann. N.Y. Acad. Sci.* **64,** 428-431. **2260**

Because of the inconclusive results of oestrogen therapy in human oesteoporosis, B. pleaded for a new approach to the problem of the action of oestrogens on osteoblastic activity and bone formation in man and the higher mammals.

—R.M.

Reifenstein, E. C. (1957). **Introduction of marked as well as prolonged biologic activity by esterification.**—*Fertil. & Steril.* **8,** 50-79. [Abst. from author's summary.] **2261**

The progestational activity of 17-α-hydroxyprogesterone was weak and ineffective in animals. However, esterification of this steroid with caproic acid to form 17-α-hydroxyprogesterone-17-*n*-caproate produced a compound with increased biological activity and apparently with a somewhat different pathway of metabolism. It was suggested that the esterified compound held considerable promise in therapy as a simply administered, potent and long-acting progestational drug.

Vereertbruggen, W. (1957). Het behandelen van nymphomane runders door intrafolliculair inspuiten van P.U. hormoon. **[Treatment of nymphomania in cows by the intrafollicular injection of chorionic gonadotrophin.]** — *Vlamm. diergeneesk. Tijdschr.* **26,** 19-23. [In Flemish. English, French and German summaries. English summary modified.] **2262**

Thirty-six out of 56 nymphomaniac cows were cured by one injection of chorionic gonadotrophin into the cysts and another 8 out of 11 after a second treatment. As a rule oestrus was observed 18–22 days later, and a total of 40 animals (71%) became pregnant, 34 of which after only one service. [See also *V.B.* **25,** 1195.]

Lobban, M. C. (1957). **The role of gonadotrophins in the production of cytological changes in the kidney and adrenal cortex of the male cat.**—*J. Physiol.* **135,** No. 1. pp. 11P-12P of Proceedings. **2263**

Only surgical castration and the repeated injection of pregnancy urine were found to produce changes in the kidney and adrenal glands exactly similar to those which have been observed in these organs from sexually inactive male cats. The luteinizing fraction of the pituitary gonadotrophins appears to be most active in this respect.—J. A. Nicholson.

Thiersch, J. B. (1957). **Effect of O-diazo acetyl-L-serine on rat litter.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 27-32. [Abst. from author's summary.] **2264**

The drug acts on the foetus directly, and not on the ovary, placenta or pituitary. It kills the entire litter in 2 doses of 5 mg./kg. on the 7th and 8th days of gestation or of 10 mg./kg. at mid-term (11th and 12th days of gestation), without affecting the mothers adversely. In combination with 6-mercaptopurine it killed litters in smaller doses than either compound alone. Neither progesterone nor adenine gave protection against the drug. When given before mating it did not delay mating, nor did it affect

the subsequent litter. Rats that had aborted 4 and 5 consecutive times after administration of the drug showed no cumulative toxicity nor impairment of fertility. Litters reared from these rats were normal in all respects and produced normal litters.

THIERSCH, J. B. (1957). **Effect of 6 diazo 5 oxo L-norleucine (DON) on the rat litter *in utero*.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 33-35. [Abst. from author's summary.] **2265**

This drug affects the foetus adversely when it is given between the time of implantation and mid-term, and 2 doses of 0·5 mg./kg.during this period will kill the entire litter. Its action appears to be directly on the foetus and not on the placenta, ovary or pituitary. Progesterone given beforehand did not protect the litters. Large doses of adenine sulphate given beforehand protected the litters to a high degree. There was no evidence of cumulative toxicity, nor adverse effect on the fertility of rats following repeated abortions caused by the drug.

OSER, B. L. & OSER, M. (1956). **Inhibitory effect of feed grade diphenyl-*p*-phenylenediamine (DPPD) on parturition in rats.**—*J. Agric. and Food Chem.* **4,** 796-797. **2266**

Five groups each of 10 female rats were fed *ad libitum* a diet containing 18·6 mg. of α-tocopherol per 100 g. of food. A commercial DPPD preparation (containing a maximum of 5% impurities) was added at 4 levels—0·025, 0·1, 0·4 and 0·6%, the lowest level being about twice the concentration used in practical rations for fowls. Gestation was significantly longer in treated than in control rats, being as much as 6 days longer in rats receiving the highest concentration. Fertility was not affected. However, there was an increase in the number of stillbirths, and the survival rate of the young was low. Those born dead were 10 to 20% heavier than control offspring.—M.G.G.

DOGGETT, V. C. (1956). **Periodicity in the fecundity of male rabbits.**—*Amer. J. Physiol.* **187,** 445-450. [Author's abst. modified.] **2267**

Semen was collected daily from 13 rabbits for prolonged periods during the course of 13 months. Total spermatozoa rose to a peak every 2–7 days (av. = 3·16 days) and then fell again to values of from 79% to less than 1% (usually about 50%) of the preceding peak. In mature animals, the frequency of peaks was significantly different from the random distribution and significantly similar among individual animals. In pubescent animals, the intervals between peaks were consistently either longer or shorter than in mature animals, but the intervals were significantly different from the random distribution. The peaks did not coincide in different animals and were therefore not due to environmental influences. The number of collections made each day did not affect the daily pattern of total spermatozoa. As the daily total spermatozoa rose and fell, motility and the volume of liquid semen rose and fell with it, but this was not so with the amount of coagulated semen.

MACFARLANE, W. V., PENNYCUIK, P. R. & THRIFT, E. (1957). **Resorption and loss of foetuses in rats living at 35°C.**—*J. Physiol.* **135,** 451-459. [Authors' summary modified.] **2268**

Rats living at 35°C. lost up to 58% of foetuses, compared with 7% resorption in controls at 22° to 28°C. Resorption rates at 35°C. were decreased by administration of progesterone, thyroxine or supplements of vitamins and protein. Acclimatization for 2–10 weeks at 35°C. before mating reduced the rate of foetal loss. Cortisone increased the rate of resorption in unheated rats and the rate of loss reached 60% in heated rats treated with cortisone. The number of corpora lutea formed was significantly reduced in rats acclimatized for 14–28 days at 35°C. before being mated.

DAMONTE, F. (1956). Tratamiento de algunos casos de retracciones y distensiones tendinosas congenitas en potrillos P.S.C. **[Treatment of congenital contraction of the tendons in foals.]** —*Gac. vet., B. Aires* **18,** 182-184. [In Spanish.] **2269**

The causes of the condition in Thoroughbred foals are enumerated and the respective lines of treatment are discussed. These include: immobilization of the affected limbs in the normal position by means of plaster bandages and splints; surgical shoeing; tenotomy; vitamin therapy; and counter-irritants.—T.E.G.R.

KENNEDY, P. C., KENDRICK, J. W. & STORMONT, C. (1957). **Adenohypophyseal aplasia, an inherited defect associated with abnormal gestation in Guernsey cattle.**—*Cornell Vet.* **47,** 160-178. [Authors' summary modified.] **2270**

The clinical and anatomical features of an inherited lethal defect in Guernsey cattle are described. The genetically defective foetus is unable to initiate parturition. Gestation lengths ranged from 292 to 526 days with a mean of 401 days. Cows carrying affected foetuses showed little sign of impending parturition; labour was weak and occurred only after the death of the foetus. There was considerable variation among foetuses, but all were small,

had short limbs, and varying degrees of hypotrichosis. The fundamental defect was an adenohypophyseal aplasia. It was found in the 7 animals examined. The associated endocrinopathies are described and their role in producing abnormal gestation periods is discussed.

HOLMES, J. R. & YOUNG, G. B. (1956). **A note on exophthalmos with strabismus in Shorthorn cattle.**—*Vet. Rec.* **69**, 148-149. [Authors' summary slightly modified.] **2271**

A description is given of cases of exophthalmos with strabismus in two Shorthorn and one crossbred Shorthorn herds. That the defect has occurred following inbreeding in America, and its appearance in the offspring of an affected bull, suggest that heredity is involved. The pedigree data, although not inconsistent with the hypothesis of a recessive gene, were insufficient to establish the part played by heredity. If the defect is due to a recessive factor, however, the gene frequency is probably quite high and other breeders should be experiencing trouble with it.

LEUCHTENBERGER, C., SCHRADER, F., HUGHES-SCHRADER, S. & GREGORY, P. W. (1956). **Certain cytochemical and cytological aspects of dwarfism in cattle.**—*J. Morph.* **99**, 481-512. [Abst. from authors' summary.] **2272**

The amount of desoxyribosenucleic acid (DNA) in individual spermatogenic cells of dwarf bulls was subjected to considerably greater variation than in normal animals. In one dwarf and 2 suspected carriers of dwarfism the mean amount of DNA in each nucleus of spermatogenic cells was very low, compared with corresponding cells of normal bulls. This variation in DNA content was not due to alteration in chromosome number.

SALISBURY, R. M. (1956). **Chronic ovine laryngitis.**—*N. Z. vet. J.* **4**, 144-146. [Author's summary copied *verbatim*.] **2273**

A chronic ovine laryngitis is described affecting rams of the Southdown breed only. It is suggested that the predisposition to the condition in this breed may be hereditary.

KROOK, L. (1957). **The pathology of renal cortical hypoplasia in the dog.** — *Nord. VetMed.* **9**, 161-176. [English summary modified.] **2274**

An account of a developmental anomaly, renal cortical hypoplasia, not previously described in dogs. The lesion was found in some 40 autopsy cases, mainly in Cocker Spaniels in which the anomaly seems to be hereditary. Affected animals die at about one year of age after a variable period of illness characterized by uraemic and, rarely, skeletal symptoms. The condition is interpreted as a primary renal cortical hypoplasia inducing secondary hyperparathyroidism via hyperphosphataemia and hypocalcaemia. The secondary hyperparathyroidism causes renal sclerosis, increasing renal insufficiency and phosphate retention. A vicious cycle therefore develops between the hypoactive kidney and the hyperactive parathyroid.

The hyperparathyroidism also induces calcinosis of the kidneys, pleura, endocardium, vocal cords and stomach as well as the constantly occurring generalized osteodystrophy. The osteodystrophy may progress to so-called "rubber jaw".

See also absts. **1974-1975** (S. abortus-equi); **1987-2002** (brucellosis); **2043** (trichomoniasis); **2068-2069** (isolation of a virus from an aborted foetus); **2223** (oxygen consumption in foetal and new-born lambs).

ZOOTECHNY

PEARMAN, R. W. (1955). **The production of animal products.**—*Colon. Pl. Anim. Prod.* **5**, 309-321. **2275**

P. put forward recommendations for the improvement of primitive slaughtering conditions. The first improvement from carrying out slaughter operations on the bare ground is to hang the carcass on the bough of a tree or to place it on grass matting. The next step is the provision of slaughter slabs with water supply and drainage. The final step is the erection of a modern abattoir. The salient points in the construction and management of a modern abattoir are given. Brief accounts are given of the preparation of dried meat, tinned meat, hides and skins, and the utilization of blood, bones, feet, and condemned meat and offal.—M.G.G.

SOLDATENKOV, P. F. & GANYUSHKINA, S. M. M. (1956). **[Conditioned reflexes of the circulation, respiration and gaseous exchange in cattle.]**—*Sechenov J. Physiol.* **42**, 893-897. [In Russian. English summary modified.] **2276**

Conditioning of 3 young cattle to the action on the circulation and respiration of i/m injection of 0·1% adrenaline solution at a dosage of 0·05–0·06 ml./kg. body weight was established by the ringing of a bell at the time of injection. After 7–14 stimulations of this kind, the conditioned circulatory and respiratory effects could be obtained when the sounding of the bell was followed by an injection of saline. Positive conditioned reflexes to the sounding of the bell with-

out any injection appeared somewhat later. The conditioned reflex proved stable, being displayed for 19–20 consecutive occasions, although its intensity progressively decreased. The experiments were said to demonstrate the high adaptability of cattle to changed situations.

TECHNIQUE AND APPARATUS

FEINBERG, J. G. (1956). **Agar clarification.**—*Nature, Lond.* **178,** 1406. **2277**

F. describes a simple procedure for satisfactory agar clarification; it is an adaptation of a step used by Viswanatha & Liener (1956) in the purification of a proteinase.—E.V.L.

BUCKHOLZ, E. E. (1957). **A precision [droplet] apparatus for applying liquids to test surfaces.**—*Canad. J. Technol.* **34,** 399-404. **2278**

A precision apparatus for applying known volumes of liquids in discrete droplets to fabrics, filter paper and other test surfaces has been assembled, and a description is supplied in detail. It has proved effective for studies carried out by the author and is recommended for use in other research fields. The apparatus is small enough to fit into a fume cupboard, where it can be operated by remote control.

—R. V. L. WALKER.

ROMHÁNYI, G. (1956). Einfaches Verfahren zur Konservierung in natürlichen Farben. **[Method for the preservation of preparations in natural colours.]**—*Virchows Arch.* **328,** 573-575. **2279**

The solution, which is used for both fixing and preservation of specimens, consists of 120 ml. of a 4% soln. of formol, 10 ml. pyridine, 10 ml. of a 5% aqueous soln. of crude nicotine and 20 g. of sodium hyposulphite, made up with distilled water to 1,000 ml. The soln. is usable after letting it stand for 24 hours. After a few days of fixing the soln. is drained off and fresh soln. is added. Preparations treated as described 10 years ago, were stated to have retained their natural colour.—E.G.

TERASAKI, P. I. & CANNON, J. A. (1957). **A technic for cross-transfusion of blood in embryonic chicks and its effect upon hatchability.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 103-107. [Authors' summary modified.] **2280**

A method is described by which 0·04–0·4 ml. of blood may be cross-transfused between chick embryos, 9–18 days old, with almost no mortality. Of the 567 eggs treated, 82% hatched, as compared with 87% of the control eggs.

ZAK, S. J., GOOD, R. H. & GOOD, R. A. (1957). **A technique for one-stage bilateral adrenalectomy in the rabbit.**—*Nature, Lond.* **179,** 100-102. **2281**

While the left adrenal may normally be removed with ease, attempts to excise the right adrenal often result in fatal haemorrhage from the vena cava. The authors give details with photographs of a simple and rapid technique for one-stage bilateral adrenalectomy which can be performed by unskilled operators with an overall mortality of less than 10%. The essential instruments are the chalazion forceps, the McKenzie brain clip applying forceps and specially-designed neuro-surgical type silver brain clips.

—E.V.L.

See also abstr. **1962** (isolation of tubercle bacilli); **1966** (isolation of Pf. mallei); **1968** (isolation of E. rhusiopathiae); **1984** (isolation of Salmonella); **2021** (cultivation of C. albicans in tissue culture); **2043** (maintenance of Tr. foetus cultures).

REPORT

BOÏKO, A. A. (1957). **[Review of work during 1956, and tasks of veterinary specialists in the second year of the 6th five-year plan.]**—*Veterinariya, Moscow* **34,** No. 1. pp. 3-9. [In Russian.] **2282**

Average milk yield in the U.S.S.R. increased to 1,597 kg. a cow as a result of better feeding. The highest average was 2,174 kg., in the Moldavian S.S.R. In the Ukraine total milk yield during the year was put at 4,800 million kg., which was 1½ times greater than in 1955 and 2·4 times greater than in 1953. There was hope of passing the target for 1960 of an average of 1,700 kg. a cow. But Georgia and some Central Asian republics lagged behind because of poor feeding and poor fertility. Thus in Georgia every 100 cows produced only 65 calves a year. The increase in meat production was disappointing—it was only 300 million kg. higher than in 1953. Wool production was also low, with an average of 2·2 kg. a sheep. Egg production was lower than in 1953, despite an increase in the number of birds by 221 million since 1954/55.

Losses of cattle were reduced by 3% and of sheep and pigs by 4%, compared with 1953. There were, however, heavy losses of piglets in Azerbaijan and Armenia, and of calves in Kazakhstan, Kirgizia and the R.S.F.S.R. The average recovery rates from non-infectious

diseases were 91·5% for cattle, 80·2% for sheep and 80·4% for pigs. During the past year the treatment of pulmonary and intestinal diseases improved with the wider use of antibiotics, although only 5,000 kg. out of a total production of 39,000 kg. of synthomycin, and only 1,500 kg. out of 10,000 kg. of biomycin were allocated to veterinary use.

The Ministry of Agriculture employed 25,000 veterinarians and 30,000 assistants ("feldshers"); the Ministry of State Farms employed 3,400 veterinarians and 6,600 assistants; and the Ministry of Meat and Milk Production employed 2,000 veterinarians and 3,100 assistants. There was still a shortage of staff. In the R.S.F.S.R. there was one veterinary worker (veterinarian or feldsher) to every 7,425 head of livestock; in the Krasnodar and Stavropol territories and in the Ukraine 1:4,554, 1:8,675 and 1:5,570, respectively. Emphasis was on sanitary measures for disease control, including "biothermic" treatment of manure, improvement of lowland pastures, regular disinfection of premises and systematic control of flies and rodents.

FOOT AND MOUTH DISEASE broke out in 1952 in the Ukraine and the Beloruss and Leningrad oblasts. It was soon eradicated in the last two regions, but it still remains a threat in the Ukraine, and during 1956 spread to the unvaccinated cattle of the Moldavian S.S.R. Control was based on vaccination, segregation and sanitary measures. The All-Union Institute for Experimental Veterinary Science ("V.I.E.V.") was trying to increase the efficacy of vaccines. The number of outbreaks of SWINE FEVER was greater in the first half of 1956 than in the same period of 1955 [figures not given]. A weak point in the control of the disease was poor control of slaughter pigs at markets and abattoirs. During the past year BRUCELLOSIS was eradicated from Gorkov, Kostrom, Voronezh, Kaluga, Ivanov, Kiev and some other oblasts. In the first half of 1956 brucellosis in cattle was reduced by 16·4% and in sheep by 14·4%, compared with the same period of the previous year. But there were still many infected farms in the Stavropol kraĭ and in Kazakhstan and Turkmenistan. In spite of an annual campaign, the WARBLE FLY had not yet been eradicated from the Moscow and other regions. Cattle were dressed with D.D.T. in oil.—R.M.

BOOK REVIEWS

VON BUDDENBROCK, W. (1956). Vergleichende Physiologie. Band III. Ernährung, Wasserhaushalt und Mineralhaushalt der Tiere. **[Comparative physiology. III. Nutrition, water metabolism and mineral metabolism of animals.]** pp. 677. Basle (& Stuttgart): Birkhäuser. DM 66. **2283**

This text-book on nutritional physiology of animals is the third volume of a work on comparative physiology, previous volumes having dealt with the physiology of sensory organs, nervous system, and hormones. The subject matter is divided into two main sections, dealing with nutrition and digestion, and water and mineral metabolism, respectively. The first section contains, among others, chapters on amino-acids, vitamins, enzymes, uptake and resorption of food, symbiosis, and various nutritional aspects in protozoa and invertebrates and on the digestive physiology of mammals, birds, reptiles, amphibia and fishes and function of their organs. In section two there are chapters on water and mineral metabolism in invertebrate and vertebrate animals. Numerous references to world literature after each chapter cover a period of about 75 years. There is a very useful subject index, an author index and an index of zoological names. Illustrations, mostly graphs, number 205 and there are 240 tables. Paper, print and production are of high quality. This book should be of great value to zoologists. In the preface it is stated that the last comparable German-language text-book on the physiology of non-mammals and invertebrates was published nearly 50 years ago.—E.G.

BINDRICH, H. (1956). Über Infektionskrankheiten der Edelpelztiere. **[Infectious diseases of fur-bearing animals.]** pp. 20. Berlin (& Leipzig): Hermelin-Verlag Dr. Paul Schöps. DM 2. **2284**

This booklet deals concisely and competently with the virus and bacterial diseases of animals bred for their fur. The diseases described are distemper, fox encephalitis, rabies, infectious encephalomyelitis of nutria, myxomatosis, TB., salmonellosis, botulism, anthrax, pseudotuberculosis and leptospirosis. All aspects of the disease are considered—transmission, symptoms, diagnosis, P.M. findings, with special emphasis on prevention and control. The book concludes with a list of preventive, hygienic measures applicable to all the diseases. No references are given.—M.G.G.

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